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MALL ARMS TRAINING

Volume I

1924

With additions for India



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MAJESTY'S STATIONERY OFFICE, LONDON

CALCUTTA: GOVERNMENT OF INDIA
CENTRAL [illegible] BRANCH
[illegible]

SMALL ARMS TRAINING.

VOLUME I.

1924.

CHAPTER I.

NSTRUCTIONS APPLICABLE TO ALL SMALL ARM WEAPONS.

PRINCIPLES AND MACHINERY OF TRAINING

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CHAPTER I.

NSTRUCTIONS APPLICABLE TO ALL SMALL ARM WEAPONS.

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PRINCIPLES AND MACHINERY OF TRAINING

2. *Object of small arms or weapon training*.—The purpose of small arms or weapon training is:—

(*a*) To render the individual soldier proficient in the use of his weapons in battle, to make him acquainted with the capabilities of the weapon with which he is armed, and to give him confidence in its use, power and accuracy.

(*b*) To ensure that leaders shall be capable (so far as the use of the weapon is concerned) of directing and controlling their commands in war, and of instructing them in peace

3. A high standard of skill with every weapon with which he is armed is highly desirable in the soldier, but skill at arms must not be regarded as the sole end of weapon training. The most skilfully planned tactical dispositions n war will fail if the men are unable to use their weapons ith effect when manœuvre has placed them in a position o do so and conversely, skill at arms by the individual will lose most of its effect in the fight unless skilled leadership directs the weapon to the position most suitable for its employment.

Training will not, therefore, be confined to the training of the soldier to handle the weapon, but will also aim at producing leaders skilled in directing the employment of the weapon in battle, that is to say, in minor tactics.

4 The three concrete fundamentals of minor tactics are.—

(*a*) The use of weapons
(*b*) The use of ground
(*c*) The use of formations.

Even during the initial or elementary stages of training, training in (*b*) and (*c*) should run concurrently with weapon training, and during the more advanced stages training in

the use of the weapon will invariably be combined with the use of ground and formations. Neither in theory nor in practice can these three be separated—they are inseparable.

2. *Responsibility for training.*

1 The training, and exercise, of the soldier in the use of his weapons is not a specialist subject · it is the normal duty of the leader, i e, the section and platoon commander.

2. Normally, the machinery of weapon training corresponds with infantry or cavalry organization and chain of command as laid down in the establishments and training manuals of these arms Thus, in the case of the infantry soldier, the section commander will exercise and train the soldier, the platoon commander will control and assist such training, the company and battalion commander will direct the training and supervise it, so far as is necessary.

During the individual training season, however, circumstances may render necessary the adoption of some measure of centralization, and where this requires a special training staff, whether in a unit or a depot, the Small Arms School is responsible for assisting in the training of the officers and N C Os required for this special duty.

Furthermore, all officers of regular infantry and cavalry, and a proportion of officers of the other arms will qualify at a Small Arms School. (*See* Secs. 33—37.)

3. *Guiding rules for weapon training.*

The following guiding rules for weapon training are applicable to all the weapons with which the soldier is armed and with which this manual deals:—

1 Not more than eight men should be instructed by one instructor, or the instruction will suffer.

2. An elementary lesson in one particular subject should not last more than three quarters of an hour.

[illegible]

4. Monotony kills interest, and must be avoided at all costs. Too much repetition leads to monotony.

5 Teaching should be **by reason rather than memory.**

6. Competition is the spice of training in peace time. During all stages of training in every weapon the spirit of competition should be fostered by the instructor.

7. Standard tests, giving a definite aim, goal, or degree of efficiency to be reached by the individual or the unit, are a great incentive towards efficiency. The conditions of existing standard tests should be explained by the instructor Such procedure leads to increased effort towards skill and efficiency.

8 The sporting spirit and desire to play for his side, or team, or regiment is inherent in every individual of the British race. This should be fostered and made use of by the instructor

4. *The instructor.*

1. So far as the instructor is concerned, training in the use of weapons may be divided approximately into three stages:—

- (a) Training the recruit; or the tyro; i e., the man with no knowledge of a particular weapon
- (b) Refreshing or exercising the trained soldier, i e., practising him in knowledge already imparted

(c) Training the officer, non-commissioned officer or soldier in the duties of the fire unit leader

2 The qualified instructor should be capable of undertaking all three stages.

5. *System of instruction*

1 The two main organs of instruction are the eye and the ear The usual tendency, a wrong one, is to train too much by the ear and not enough by the eye, because talking requires less effort than action The brain, however, grasps more readily and retains more firmly what it sees with the eye than what it hears with the ear. The instructor must, therefore, utilise his men's eyes, even more than their hearing, and for this purpose, instruction should follow a definite sequence:—

Explanation.—Instruction by the ear.
Demonstration —Instruction by the eye.
Executions—Testing the results of the instruction and correcting mistakes
Repetition —Practice to gain improvement.

This actual sequence, though advisable, need not be invariably followed.

2. At all times the reasoning powers of those under instruction should constantly be called into play. This ensures that the brain is working. It is especially necessary in the case of automatic weapons. Men should be called upon to reason and work out for themselves the "whys and wherefores" of all action—whether tactical or technical—that they are instructed to carry out.

Instructors should recognise that the surest and qu[illegible] road to success is to call upon and develop the bra[illegible] of those under instruction.

6. *Demonstration as a means of instruction.*

1. The system of teaching by demonstration will be employed during every stage of instruction, of the recruit, the tyro, the soldier, and the leader. This applies on the manœuvre ground, the range (battle firing and classification), the barrack square, and the barrack room. Training by demonstration requires forethought, preparation and rehearsal.

2. The allotment of live practice ammunition for all weapons in peace time is necessarily limited It is therefore important, when demonstrations are given involving the use of live ammunition, especially tracer, that the numbers attending should be as large as practicable, pro-[illegible]ed that they comprise only those likely to benefit from demonstration and are not too many to follow it [illegible]quately In other words, it is necessary to balance economy of ammunition with instructional efficiency.

3. The following rules should be borne in mind by commanders and others when carrying out demonstrations where considerable numbers of spectators are present —

(a) The audience, whether officers, non-commissioned officers or men, should be well under control, divided up into parties, each under a leader. The latter should be made responsible throughout the demonstration for explaining the objects and lessons which the demonstration is intended to show.

(b) Care should be taken that all the audience are in a position throughout to see the demonstration and hear the explanation. In this respect any view points or halting places selected must be carefully chosen and the direction of the wind must be taken into account.

(c) Discussion should follow the demonstration and any criticisms or views expressed should be heard by all

(d) Careful rehearsal by the individuals or units giving the demonstration is essential.

7. *Anti-gas defence.*

1. Gas defensive measures will be frequently incorporated into all exercises involving the use of the weapon. This applies to all weapons without exception In framing competitions for weapon training on service lines the importance of efficiency in gas defensive measures combined with the use of the weapon should be taken into account.

8. *Safety precautions during training.*

1 **At the beginning of all weapon training parades, arms, dummy cartridges, pouches, &c., will be carefully examined.**

2 The detailed safety precautions necessary during training, and especially when ammunition is used, are laid down in other chapters of this manual

3 Any building which contains explosives should be considered as an explosive store and be dealt with as far as possible under the magazine regulations.

Experiments, tests, &c., with explosives, tubes, fuzes, grenades or detonators are in no case to take place inside any building They will be carried out in the open with the greatest care and only by individuals who have received expert training and are qualified to do so.

4 The use of dummy ammunition during training is necessary to efficiency, but the consequent risk of accident must be recognised by all commanders

5. Dummy ammunition is employed during training in the case of all weapons dealt with in this manual. Unless the regulations for its use are strictly carried out accidents are almost certain to occur either sooner or later.

The best preventive of accident is discipline.

6. When dummy cartridges are used for setting up stoppages with light automatics on the range, officers conducting the practice will personally supervise the issue and subsequent collection of the dummy cartridges.

9. *Weapon training year.*

1 For purposes of firing annual courses and accounting for practice ammunition the weapon training period will be divided into years beginning as under, to accord with local climatic conditions

At Home (Regulars, Militia, Channel Islands Militia, and Territorial Army)	1st November
Gibraltar, Mauritius, North China	1st January.
Ceylon, Cyprus	1st February.
Bermuda, Egypt and Sudan, Jamaica, Malta, Malaya	1st April.
South China	1st September.
West Africa	1st October.

2 In interim garrisons abroad the weapon training year will begin on the following dates —

Palestine	1st March
Iraq Rhine	1st April.

3. In India the weapon training year will begin on 1st April except in the case of the Baluchistan District, where for climatic reasons it will begin on 1st January.

10. *Special instructions*

1 The words "Battalion" and "Company" throughout this manual will be read, when necessary, to mean "Regiment," and "Squadron or Battery."

2. General Officers Commanding-in-Chief will correspond direct with the Commandant, Small Arms School, Hythe, on weapon training questions

(India.—Districts and independent brigades will correspond direct with Commandant, Small Arms Schools (India), Pachmarhi, on weapon training questions)

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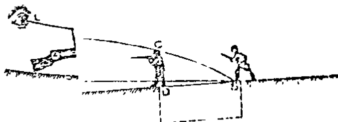
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Egypt and Sudan	1st April.
Jamaica	1st April.
Malta	1st April.
Malaya	1st April.
South China	1st September.
West Africa	1st October.

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A B	=	Axis,	=	First Catch
B E	=	Line,	=	First Graze
B S	=	Line D S	=	Dangerous Space

The *cone of fire* is the figure formed in the air by the several trajectories of the bullets fired.

12. *Factors affecting the bullet before it leaves the muzzle.*

1 *Rifling* —A *barrel* is said to be rifled when it has spiral *grooves* cut down the *bore* Rifling a *barrel* enables an elongated bullet to be used, the advantage of this form of bullet is that it has great weight in proportion to the surface directly opposed to the air, it has therefore great power of overcoming the resistance of the air, and thus keeping up its velocity When the charge is fired, the bullet is *forced into*, and *follows*, *the grooves* up the *barrel*, thus leaving the *muzzle* with rotation on its longer axis, *i.e.*, spinning sideways but with nose foremost. This tends to keep its nose foremost and therefore to ensure accuracy of flight

2 *Force of explosion* —On firing a round of ammunition, the gases formed cause the bullet to move from *lead* to *muzzle*, leaving the latter at a speed of 2,440 feet per second, in the case of Mark VII ammunition.

3 *Jump* —On the weapon being fired, a vibratory or wavy motion is set up in the *barrel*, and at the moment the bullet leaves the *bore* the *muzzle* is usually deflected from its original axis both vertically and laterally.

This deviation is known as "jump."

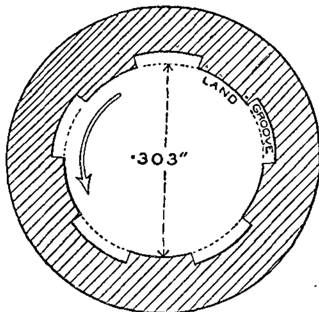
Vertical jump may be either positive (upwards) or negative (downwards) It is compensated for by the use of varying heights of *foresight*.

Lateral jump is allowed for by lateral adjustment of the *foresight*

Varying strengths of charges causing changes in *muzzle* velocity will affect the jump.

The stocking up, i.e., fitting of S.M.L.E. rifle, is most carefully adjusted at the factory, but any warping of the fore end, loosening of screws, etc., may affect the jump

PLATE 2.



ENFIELD RIFLING.

Left handed, one complete turn in 10".
Depth of grooves ·0065".

4 *Effect of firing with the bayonet fixed.*—The weight of the bayonet affects the jump and the shooting of the rifle (*see* Plate 3)

Normally with Mk VII ammunition the jump is positive and allowance has to be made as in the following table:—

Range.	Elevation required
600	450
500	350
400	200
300	200 and aim down 2 feet.
200	Aim down 1½ feet.

No two rifles shoot exactly alike

In every case the man must know the requirements of his own rifle

5 *Resting the rifle.*—The rifle should be rested near the point of balance If the rifle is properly rested the jump is not affected

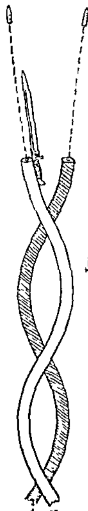
6 *Heated barrel* —The bore expands and hence the bullet fits less tightly Thus, after prolonged rapid fire, bullets tend to fall short

7 *Oily barrel* —The first shot or two may be erratic until the oil is burnt up

13. *Factors affecting the bullet after it leaves the muzzle.*

1 *Resistance of the air.*—Resistance of the air causes the velocity of the bullet to decrease rapidly. The Mk. VII bullet leaves the muzzle travelling at the rate of about 800 yards per second The resistance of the air allows it travel only about 600 yards in first second, about 400 y. in second second, about 300 yards in third second.

PLATE 3



JUMP

S.M.L.E. Mk. VII Ammunition

In the above diagram the barrel B shews the effect of firing with bayonet fixed.

2 *Gravity.*—Gravity acts on the bullet immediately it leaves the *muzzle*, drawing it downwards with ever-increasing velocity Thus the path of the bullet (known as the *trajectory*) is curved instead of straight.

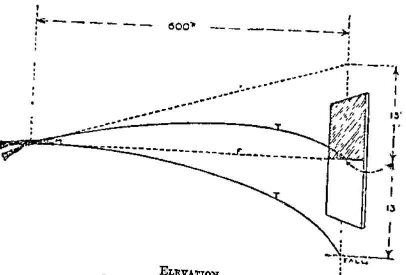
3 *Elevation* —In order to allow for the fall of the bullet it is necessary to direct the line of departure as much above the object to be hit as the bullet will fall below it if the axis of the *barrel* is pointed at the target This raising of the *barrel* to allow for the curve of the trajectory is termed *giving elevation* (*See* Plate 4)

As the target must be kept in view, the weapon is provided with sights which permit the firer to give the elevation required whilst keeping his eye fixed on the mark.

4 *Light* —In bad light the foresight is less distinctly seen than in good light, and more of it is unconsciously taken into the line of sight This factor naturally affects the elevation used, less being required on a dull than on a bright day

5 *Sighting of ·303" weapons* —In the sighting of ·303" weapons a " mean," or average, graduation for each range has been adopted In this way a high general standard of accuracy sufficient for all practical purposes is obtained. Each weapon is carefully tested before issue, and is sighted so as to hit the point aimed at, but it must be understood that no two behave in an exactly similar manner. Even if compensation could be made for every error in the sighting before issue, wear of parts and loosening or tightening of screws, etc , would bring about faults from time to time. It is therefore necessary that every man should study the shooting of his own weapon and find out if there is any error at the shorter ranges, *i.e.*, below 500 – 600 yards, in the graduations marked on the backsight.

PLATE 4.


600 y
13
13
FALL
ELEVATION.
M = Muzzle.
F F = Line of Departure.
T T = Trajectory.

For strong winds at 2,000 yards deduct 50 for a rear wind.

8. *Atmospheric conditions.*—The rifle is sighted at the factory with

(*a*) Horizontal line of sight.
(*b*) Barometer 30″ (sea level)
(*c*) Thermometer 60° Fahr.

Allowance for barometric pressure need not be made except when firing at considerable altitudes. Going up hill the air becomes rarer, and there being less pressure, the barometer falls, and as the air offers less resistance less elevation is required

Only extreme changes of temperature require consideration: thermometer rising, air becomes rarer, offers less resistance, therefore less elevation is required, with thermometer falling more elevation is required

The rules for correction in cases of variations in barometric pressure and changes of temperature are·—

For every inch the barometer rises above or falls below 30 inches, add, or deduct, $1\frac{1}{2}$ yards for each 100 yards of range.

Note.—Barometer falls about 1 inch for every 1,000 feet of altitude

For every degree the thermometer rises above or falls below 60° Fahr deduct, or add, 1/10th yard for each 100 yards of range.

Example: On the frontier in India a range-taker gives 1,600 yards to the object Barometer reads 24″, thermometer reads 90°.

Barometer·	$6 \times 1\frac{1}{2} \times 16$ =	144	Deduct.
Thermometer:	$30 \times 1/10\text{th} \times 16$ =	48	Deduct.
Correct backsight elevation	=	1,400.	

14. *Dangerous space.*

1 The extent of the dangerous space depends on —

(a) The range [*See* Plate 5 (a).]
(b) *The firer's position and the consequent height of his weapon above the ground* [*See* Plate 5 (b).]
(c) The height of the object fired at. [*See* Plate 5 (c).]
(d) The flatness of the trajectory [*See* Plate 5 (d).]
(e) The conformation of the ground. [*See* Plate 5 (e).]

2 *The dangerous space—*

Decreases —

As the range increases, owing to the steeper angles of descent of the bullet at the longer ranges. [*See* Plate 5 (a).]

Increases —

(a) The nearer the weapon is to the ground [*see* Plate 5 (b)],
(b) The higher the object fired at [*see* Plate 5 (c)],
(c) The flatter the trajectory [*see* Plate 5 (d)],
(d) The more nearly the slope of the ground conforms to the angle at which the bullet falls [*see* Plate 5 (e)]

15. *Angles of descent*

1. A general knowledge of the angle of fall of the bullet in the last 100 yards of its flight, at all ranges, is essential as a guide in deciding when individual fire may be opened with effect (*See* Appendix VII, Vol. II)

2 The longer range the more abruptly does the bullet fall; consequently, the greater the distance the more accurately must the range be ascertained.

For strong winds at 2,000 yards deduct 50 for a rear wind.

8. *Atmospheric conditions.*—The rifle is sighted at the factory with

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Only extreme changes of temperature require consideration: thermometer rising, air becomes rarer, offers less resistance, therefore less elevation is required, with thermometer falling more elevation is required

The rules for correction in cases of variations in barometric pressure and changes of temperature are.—

For every inch the barometer rises above or falls below 30 inches, add, or deduct, 1½ yards for each 100 yards of range.

Note.—Barometer falls about 1 inch for every 1,000 feet of altitude

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Example. On the frontier in India a range-taker gives 1,600 yards to the object Barometer reads 24″, thermometer reads 90°.

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As the range increases, owing to the steeper angles of descent of the bullet at the longer ranges. [*See* Plate 5 (a).]

Increases.—

(a) The nearer the weapon is to the ground [*see* Plate 5 (b)],
(b) The higher the object fired at [*see* Plate 5 (c)],
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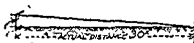
1. A general knowledge of the angle of fall of the bullet in the last 100 yards of its flight, at all ranges, is essential as a guide in deciding when individual fire may be opened with effect (*See* Appendix VII, Vol. II.)

2 The longer range the more abruptly does the bullet fall; consequently, the greater the distance the more accurately must the range be ascertained.

PLATE 5 (a).

DANGEROUS SPACE

This diagram shews height increased 6 times.



Range = 600×.
Slope of fall = 1 in 90
Dangerous space for prone man (1′ high) is 30× (approx.).



Range = 1,000×
Slope = 1 in 30.
Dangerous space is 10× (approx.).



Plate 5 (b)



Plate 5 (c).

Plate 5 (d)

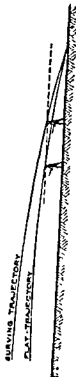
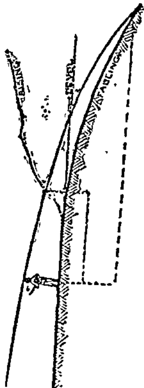


Plate 5 (e)



3 Hence the effective limits of individual rifle fire are to a great extent governed by the curve of the trajectory and the power of correctly estimating ranges, and unless the strike of the bullet can be observed, the effect of individual rifle fire at long ranges must be largely a matter of chance.

16. *Ricochets*

1 Bullets which rebound after striking the ground or any other obstacle and continue their flight are said to ricochet.
2 Ricochets may occur from any surface, and bullets may ricochet two or even three times before their flight is finally arrested. Bullets are less likely to ricochet from soft ground than from hard, smooth surfaces.

17. *Firing up and down hill.*

1 When a shot is fired at a target placed on the same level as the firer, the forces acting on the bullet cause it to travel in its greatest curve, and the greatest elevation for any given distance must, therefore, be given to the weapon.
2 If a shot is fired perpendicularly upwards or downwards, no elevation is required, for the bullet will travel in an approximately straight line until its impetus is exhausted.

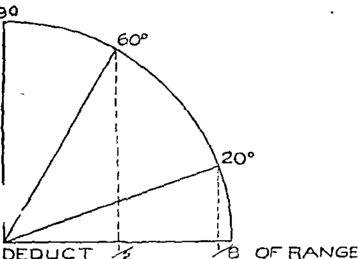
3 Hence it follows that when shooting up or down hill, less elevation is necessary than when the object is on the same level

4. Only steep slopes such as are found in mountainous regions need be taken into account.

5 The following is a rough guide. (*See* Plate 6)

For slopes of 20° deduct $\frac{1}{16}$th of range.
For slopes of 40° deduct $\frac{1}{4}$th of range.
For slopes of 60° deduct $\frac{1}{2}$ of range.

PLATE 6.



FIRING UP OR DOWN SLOPES.

18. *Collective fire.*

1. *At the longer ranges* collective rifle fire or automati fire, rather than individual rifle fire, are necessary to obtai a good effect under service conditions.

2. Individual marksmanship is greatly affected by suc causes as the condition of the firer, the atmosphere, hea light, imperfection of ammunition, uncertainty in estima

tion of the range, the difficulty of aiming at a small or indistinct object, the steepness of the fall of the bullet being rapidly accentuated as the range increases.

3 The diagram represents a large target fired at by an individual, without alteration of elevation or point of aim. (*See* Plate 7)

The following points should be noted —

(a) All the shots are not in the same place.

(b) The shot holes are more numerous in the centre.

(c) Approximately half the shots are above the centre horizontal line, the other half below.

(d) Approximately half the shots are on the right of the centre vertical line, the other half on the left.

(e) The distance between the topmost shot and the lowest one is greater than that between the extreme right and left shots.

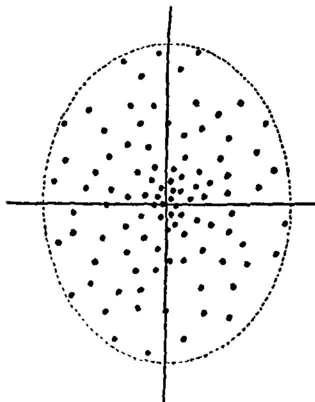
The following deductions can be made:—

(a) Since the shots are not in the same place, it follows that the trajectories of all the bullets do not coincide The figure thus formed is known as the "*cone of fire*"

(b) Since the shot holes are more numerous in the centre, it is evident that the cone of fire is denser in the centre than on the outside.

(c), (d) and (e) show that the cone of fire is not circular but oblong in section, and that its density decreases uniformly from the centre to the outside

PLATE 7.



CONE OF FIRE OF RIFLE, VERTICAL SECTION.
100 shots.

19. *The cone of fire.*

1. The cone of fire from a number of rifles is larger than that from one, since skill and eyesight vary. The size of the cone will be still further increased by such causes as the firers being tired, or the aiming mark being hard to see.

2. Where collective fire is applied to a large vertical target the portion of ground struck by all the shots passing through the target is known as "*the Beaten Zone*."

3. If three rings are then drawn on the target as shown in Plate 8, that portion of ground struck by shots passing through the centre ring is known as "*The Nucleus of the Beaten Zone*."

4. That portion struck by bullets passing through the centre and second rings is known as "*The Zone of Effective Fire or Effective Beaten Zone*."

5. *The Nucleus* contains 50 per cent. of shots fired.

6. *The Effective Beaten Zone* contains 75 per cent. of shots fired.

7. The part of the Beaten Zone outside the Effective Beaten Zone contains the remainder.

8. Useful results can only be expected if the target is included within the *Effective Beaten Zone* for any range.

9. Experiments have shown that as the range increases the size of the *Effective Beaten Zone* (E.B.Z.) decreases. (*See* Plate 9.) This is due to the increased angle of descent of the bullet. Beyond 1,500 yards the E.B.Z. increases again, especially laterally, owing to the increased effects of errors in aiming and their causes.

10. Under favourable peace conditions it has been found that the size of the E.B.Z. varies little in the case of different units.

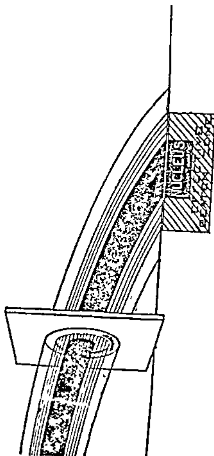
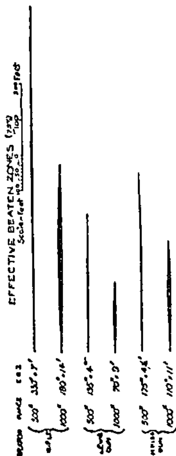


PLATE 8

Plate 9.


EFFECTIVE BEATEN ZONES (75%)
Scale-feet 100 50 0 100 200 Feet
335'×7'
1000' 180'×14'
500' 135'×4'
1000' 70'×9'
500' 175'×4.5'
1000' 110'×11'

2 The permissible error in ranging is equal to half the depth of the E B Z for any particular range (*See* Plate 10)

For example, assume target to be 1,000 yards distant.

E B Z of the rifle is 180 yards.

If [illegible] will

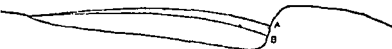
If [illegible] the whole of the E B Z will miss the target

21. *Fire effect in relation to ground*

1 "Cones of Fire," "Beaten Zones," and "Dangerous Spaces" have already been explained It is necessary, however, to consider them in relation to various forms of ground.

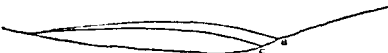
2 For example, a cone of fire striking a steep hillside will cover a very small area of ground—A B.

Fig 1



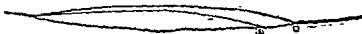
3 The same cone of fire striking a gentler slope will cover a slightly larger area of ground—B C.

Fig. 2.



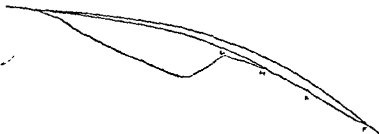
4. In similar proportion—*see* D E.

Fig. 3.



5. The greatest area swept by bullets will be in the ca
where the fall of the ground is parallel to the trajectory
the bullets, *in which case the whole area F G is a dang*
zone, of which H F is the beaten zone.

Fig. 4.



Troops, even though under cover from the enemy's vie
at K

6.

cult

grou

knowledge is a guide to the probable danger incurred by troops crossing various kinds of ground, and is of assistance in selecting sites for defence posts and larger localities for defence.

7. Troops advancing in depth should therefore adopt formations suitable to the occasion.

22. *Observation of fire.*

1. Observation of fire is of great importance, and every opportunity of practisin [illegible]
battle practices The [illegible]
depend largely on the n [illegible]

2 If observation can [illegible]
of obtaining the correct sighting elevation, since the error of the day is automatically overcome.

[illegible]

strike of one bullet may bear no relation to the position of the fall of the majority of the bullets of the men firing.

(For further details of theory, see *Text Book of Small Arms.*)

WEAPONS, GROUND AND FORMATIONS.

23. *General considerations.*

. The principles governing fire direction, fire control, fire ipline, fire and formations, fire and movement, and the of ground are set out in Infantry Training, Vol. II 21), Chapter I.

. Secs. 23—32 deal with the system of training both leader and the man in these subjects.

. The aim of the system of training will be to build up progressive stages the individual knowledge required to collective effect to these principles

. The individual requirements include the following:—

a) In the leader—

i Ability to estimate range and to give clear concise fire orders suitable for all occasions and targets, and to exercise proper fire control over his unit.

ii. Ability to study ground in relation to fire effect so as to select fire positions quickly and be able to take advantage of good lines of approach that afford cover.

iii. Ability to manœuvre his unit in the formation most suitable to prevailing conditions and to vary the formation of his unit accordingly.

iv. Ability to give practical effect to the principles which govern the application of infantry fire in battle.

(b) In the man—

i. Ability to use his weapon to produce accurate fire of the required volume.

ii. Ability to recognise aiming points indicated by the leader.

iii. Ability to give immediate effect to the detailed instructions included in the fire order of the leader.

iv. Ability to adapt his firing position to make the best use of the ground within the fire position selected by the leader.

v. Ability to reconnoitre ground and report to the leader points suitable for fire positions and the existence of good lines of approach.

vi. Knowledge of his individual position in any type of formation ordered by the leader.

vii. Ability to carry on the fight and use his weapons effectively when control by the leader is no longer possible.

5. The progressive stages of individual training leading up to these requirements include the following subjects, which are dealt with in this chapter as being generally applicable to all small arm weapons —

(a) Visual training.

(b) Judging distance.

(c) Fire control.

(d) Training in the use of ground.

(e) Training in the use of formations.

24. *Visual training*

1. Exercises framed to stimulate the soldier's powers o discernment and recognition should commence early in hi training and continue throughout his service

2. Visual training will include the study of ground, impres sions of size, recognition of targets and ground features, an observation of fire Training will begin with question framed to develop the recruit's power of discerning object and describing what he sees Any ordinary objects will b counted, and figures of different colours will be placed some times in the open and sometimes under partial cover ir front of various backgrounds Men will be employed t perform the firing motions in order to show how motior catches the eye and exposes the firer's position Blank ammunition will be used to give practice to the ear ir locating an enemy by sound

3 As progress is made, these exercises will be carried out nder stricter conditions the observer lying down or behind cover Special attention will be given to recognising features of ground such as fire positions, dead ground, &c The use of field glasses will be practised, distant objects being examined and described both with and without the aid of glasses Leaders will be constantly practised in searching ground with glasses

4. In connection with visual training, men will be familiarised with all terms applied to features of ground, colours, shapes, and military objects generally so that their powers of description and recognition may be improved

5. A Military Vocabulary is appended, which every soldier should know —

1. *Features, Artificial.*

Footpath	Obstacles	Chimney.
Ride	Viaduct.	Chimney Stack.
Track	Culvert	Factory.
Cross Roads	Cutting	Crane.
Road Junction	Embankment	Gasometer.
Fenced	Canal	Gable-end
Unfenced	Lock.	Thatch
Post and Rail } Fences	Ferry	Tiled
Wire. } Fences	Ford	Slate.
Iron } Fences	Moat.	
Hurdles.	Windmill	

2 *Colours.*

White	Yellow	Green.	Brown
Black	Blue	Red.	

3. *Features, Natural*

Fir.	Copse	Grass.	River
Poplar	Bush	Stubble	Stream.
Bushy topped (Trees)	Gorse	Ricks	Pond.
Hedgerow	Corn Field.	Stacks	Lake.
Wood.	Plough	Stooks	

4. *Topographical.*

Valley.	Knoll	Concave	Nullah.
Defile	Saddle	Convex.	Donga.
Ridge	Fold	Cliff.	Clearing.
Crest line	Slopes, forward and reverse	Gorge	Salient.
Horizon	Dead Ground.	Ravine.	Sector of Groun
Spur.		Quarry.	

5. Field engineering.

Trench.	Dug-out.	Redoubt.	Circular
Parapet.	Shell-hole.	Observation Post.	Vertical.
Parados.	Defence post (held by section or small group)	Blockhouse.	Horizontal.
Fire Step	Centre of resistance (held by larger body).	Sangar.	Oblique.
Revetment.		Right Angle	Enfilade
Traverse.		Square	Direct.
Breastwork.		Triangle	Indirect.
Barricade.			

6. Formations.

Column of Route.	Deployed in Section Columns		Fours.
Mass.	,, Platoon Columns		Arrow Head.
Line	,, Company Columns		File.
Extended Line	Diamond.		Single File.
	Square		

7. Aeroplanes.

Tractor.	Triplane	Fuselage	Rudder.
Pusher.	Biplane	Plane	Strut
Identification rings	Monoplane	Wing.	Cockpit
Streamers	Motor	Tail	Under-carriage.
	Propeller.		

8 Airships

Envelope	Nacelle (or car)	Elevators.	Rudder.

9. Kite Balloons.

Stabilisers.	Basket	Parachute

6 In the elementary stages of Visual Training and while the Military Vocabulary is being taught the objects to be seen or recognized may be indicated by descriptions or by the instructor aiming a rifle at the object and those under instruction looking along the sights The instructor then explains to the men what they have been looking at, using *the Military Vocabulary.*

7 Instruction in visual training should be progressive. The following stages, during which the Military Vocabulary

should be practised, indicate a progressive sequence of instruction.

INSTRUCTOR'S NOTES

1st Stage. TAUGHT IN OR NEAR BARRACKS

The recruit should be taught to recognize his immediate surroundings, i e , his eyes must be trained to convey what they see to the brain and to discern detail For example, does he know all badges of rank which he sees daily, and can he describe what they comprise? Does he know the names of familiar objects round him, such as "A roof with a gable end," "A church with a 'tower' as opposed to one with a 'spire,'" and so on? Keeping (in this stage) to elementary terms in Military Vocabulary

Kit required—Either use objects seen from the barrack square or landscape targets One rifle and aiming rest.

2nd Stage. OPEN COUNTRY

(Or in wet weather on landscape targets with small improvised figures, &c)

Object —To teach men to locate service targets up to 800 yards.

(a) *Silhouette targets* of different sizes, shapes and colours, arranged against various backgrounds The areas in which the targets are, should have their limits clearly marked and should be described

i. Targets counted.

ii Their characteristics and positions described.

iii. Reasons for difference in their visibility brought out.

Kit required.—Silhouette targets Nos 2, 3, 4 and 5. Flag and a man.

(b) *Men employed* instead of targets

i. Movement quickly detected

ii. Blank ammunition used to train the ear to locate sound

This exercise requires careful preparation on the part of the officer or non-commissioned officer who is going to conduct it:—

(a) Targets not too difficult in one sector

(b) Targets more difficult in another sector

(c) Men in normal firing positions

These arrangements should be made only a short time before the exercise begins Unless this is done the light may change and the value of the exercise will then be lost

Kit required —Flag and men with rifles and blank ammunition

3rd Stage. EXAMINATION OF GROUND

(On landscape targets, or open country.)

Object —To enable men to make clear reports, to understand instructions, and to recognize features of military importance

(a) *Definite line* in landscape Described in detail

(b) *Areas of ground* —Clearly defined boundaries. Description of general shape Natural and artificial features Trees, fences, fields, &c Features of military importance brought to notice by questions Military Vocabulary largely increased.

As progress is made —The section examines the ground and gives a description A limited time will be given for the examination by the section, which is then turned about

to give its description. Large areas should be divided into sectors: foreground, middle distance, and background.

(c) *Road work.*—Cultivate an eye for country by making men observe what they pass on the march. Question them after a given interval.

SPECIAL NOTE

The recruit should be taught on such lines as under:—

(a) Difference between a hedgerow and a fence.
Difference between a tree and a bush.

(b) Various agricultural terms.

(c) Features, natural and artificial.

(d) Topographical terms.

(e) Colours

(f) Any other terms of Military Vocabulary not taught in the 1st Stage.

Kit required.—If working indoors, a landscape target

4th Stage. RECOGNITION WITHOUT AIDS.

Object—To train the firer to recognize targets described and to understand the exact point at which his commander wishes him to aim.

In all lessons on Recognition, accuracy of aim *will be* insisted on, however indistinct the point indicated may appear.

In this stage the Instructor indicates various targets without aids (Direct Method). The men recognize and lay aim. Plenty of practice is necessary.

Kit required.—One aiming rest per man

5th Stage. RECOGNITION WITH AIDS.

In this stage, the Instructor explains to the men the various aids used in indicating targets in fire orders, and describes difficult targets using aids

The men recognize, and lay aims

Kit required.—One aiming rest per man

NOTE.—After the recruit has been thoroughly trained in the above five stages of Recognition, he will be given practice in receiving complete Fire Orders

25. *Training of the leader in indication*

1. It is estimated that 75 per cent. of shots are probably wasted owing to bad indication and recognition.

2. In teaching Indication, a reference point, or points, with ranges to each will always be given

3 Aiming points will be described whenever possible by the direct method, *e g*, without aids If aids are used the reference point will always be named before the description of the aiming point.

4 To ensure uniformity, one system of Indication is imperative throughout the army.

5. Supplementary methods, known respectively as the Vertical Clock Ray and Degree methods, may be used in connection with reference points.

INSTRUCTOR'S NOTES

Taught in Stages

1st Stage.

Description of aiming points, without aids. "Direct," or normal method, using (*a*) or (*b*) as required:—

(*a*) Indication by description of any obvious target.

(b) Indication by direction, *e.g.*, slightly, quarter, half, three-quarter, right or left from either—

i. Last target, or

ii. General direction in which men are moving or facing, ending up with description of target in each case

Kit required.—One aiming rest for each leader.

2nd Stage.

Indication of aiming points, using aids. **Aids should only be used when absolutely necessary.**

Various Aids.

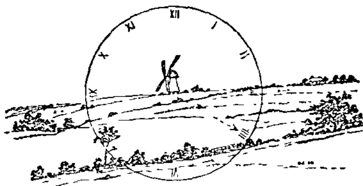
1. *Reference points.*—Prominent objects—about 20° apart—Reasonably distant—Of different kinds. Names by which they are known must be made clear to all.

2. *Vertical Clock Ray.*—Shows the direction of an object from a "reference point." The lowest part of the reference point is taken to be the centre of the face of a clock hanging vertically. The direction of the target right or left of the reference point is given by the Clock Ray.

Example. Windmill—4 o'clock—two bushes. (Plate 11.) (*India.—In order to avoid the possibility of the fire-unit commander or the firers making a mistake between 4 o'clock and 8 o'clock or 5 o'clock and 7 o'clock, etc., it is advisable to give the rough direction* (i.e., *Right or Left*) *before giving the clock ray, e.g., Windmill—Right—4 o'clock—two bushes.*)

3. *Degree Method*, the angular distance being measured by graticuled field glasses, by the use of the hand or by any convenient appliance such as the *foresight* or *backsight* of the rifle, or the *foresight* of the Lewis gun. This method shows approximately the angular distance of the target from

PLATE 11.



the reference point and can also be used to denote, in the case of a distributed fire order, the lateral width of distribution required to cover the target

Example Windmill—4 o'clock—2°—small bush (Plate 12) (*India —Windmill—Right—4 o'clock—2°—Small bush*)

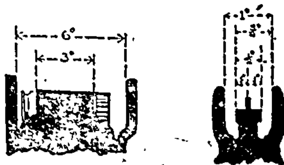
i All officers, non commissioned officers and men should know what angles are subtended by the various parts of their own hands when held at arm's length or by the *sights* of the rifle when held in the aiming position

NOTE.—The degrees shewn in Plate 13 are only approximate; each man must test for himself

ii. For purposes of instruction a degree scale (calculated for a given distance, say 20 yards) should be painted on a wall in barracks.

PLATE 12.

PLATE 13

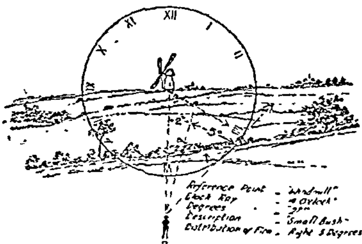


iii. The angles subtended may vary slightly with each person. It is therefore necessary for each individual to memorize the angles as seen by him.

iv. The indication should end in each case with a description of the aiming point.

Example of the use of both the Clock Ray and Degrees to indicate a target and the amount of distribution required:—Windmill—4 o'clock—2°—small bush—right 5°. (Plate 14)
(*India.—Windmill—Right—4 o'clock—2°—Small bush—from small bush to 5° Right*)

PLATE 14



NOTE.—Combined Clock Ray and degrees make a lengthy fire order and are seldom necessary.

Practice in indication.—A rifle is laid on the point or points to be indicated (or pins can be used on miniature landscape targets); the leader under instruction indicates the target by the methods described above. The remainder of the class recognize it.

4.—*Horizontal Clock Code* This code is used to describe targets to an observer at a distance and when the target cannot be accurately located by co-ordinates on a squared map.

i All officers and senior N C Os down to platoon serjeants will be instructed in this method, as it enables infantry to indicate the approximate positions of targets to artillery, machine guns, etc

ii In this method the "reference point" is taken to be the centre of a clock lying flat on the ground with 12 o'clock pointing approximately due North

iii. The position of the target is indicated by using a clock ray combined with the distance between the reference point and the target, *estimated in yards.*

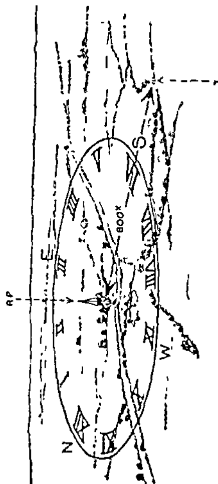
N B —For estimating a lateral distance in yards, *see* (Lateral Judging Distance, Section 27).

iv In Plate 15 an infantry observer has seen a gun firing behind some rising ground South of Staple Church, and sends back the following message:—

"Reference Map, HAZEBROUCK 5A. Can see enemy gun firing. Six o'clock. 800 yards from STAPLE CHURCH. Time 1430."

v An advantage of this method is that the receiver of the message need not know the sender's position

PLATE 15



HORIZONTAL CLOCK.

R P = Reference Point.
T = Target.

vi. *Reporting observation of arti*... zontal Clock Code can also b... ing the fall of rounds fired by ... this case the target is taken as ... horizontal clock with 12 o'clock po... mately true North

As each round falls, its direction from the ta... ported with reference to the clock face, and its ...e from the target is estimated in yards (*e.g*, 3 o'cl..., 200 yards, 9 o'clock, 50 yards)

Whenever possible the place or places from which the ... formation given as ... lead the artillery ... an see the target. ... chance of having

26. *Judging distance*

1 Distances may be judged:—

(*a*) By measuring the intervening ground with the eye in terms of some familiar unit such as 100 yards

(*b*) By objects of known size; by the visibility of the object as affected by light, atmospheric conditions, background, etc.

(*c*) By bracketing.

(*d*) By halving.

(*e*) By use of key ranges and maps

(*f*) By the mean (or average) of the estimates of several individuals.

...al methods will be practised until it is found tha...ances can be approximately judged from the gener... impression conveyed to the eye. The observer must, how ever, bear in mind that his judgment may be influenced b... certain conditions of ground, light, etc., which are men tioned below.

(a) *Objects are overestimated*—

When kneeling or lying
When both background and object are of a simila... colour.
On broken ground.
When looking over a valley or undulating ground i... dull or foggy weather.

(b) *Objects are underestimated*—

When the sun is behind the observer.
In bright light or clear atmosphere
When both background and object are of different colours
When the intervening ground is level or covered with snow
When looking upwards or downwards
When the object is large.

3 The best means of obtaining the range is by observation of fire Especially is this the case with automatic weapons.

4. *Recruits and Trained soldiers* will be taught to judge up to 800 yards.

5. *Officers, N.C Os and selected men* will be taught to judge up to 1,400 yards.

6. *Practice*.—Constant practice is necessary under all conditions, both in peace and war, as serious errors will otherwise occur in action.

Instructor's Notes.

The following is the sequence and the various methods of judging distance which should be taught

A Sequence of Instruction.

I *Unit of measure.*—Some familiar distance is used as a unit; 100 yards is a convenient unit, the section place themselves independently at what they think is 100 yards from an object; the distance between the farthest and nearest man of the section is paced, 100 yards is measured accurately from the object, the section is shown the correct unit. This method can only be used when the whole of the ground to be measured is visible, examples are shown to which this method cannot be, or can only be partly, applied. The section practises on figures put out at varying distances up to 400 yards

II *Appearance* —The appearance of men in different positions, and of objects of known size, is studied and noted, at various distances and under all conditions of light, background, etc

The following points should be noted —

(a) Th[illegible]
(b) [illegible] ders of men.
(c) [illegible]
(d) [illegible] and head-dress.
(e) [illegible] g

Appearance varies with the eyesight of individuals; a classification range is suitable for the early lessons.

Opportunities for revising the impressions of the appearance of men at various distances should be given.

..i methods will be practised until it is found that ..ances can be approximately judged from the general impression conveyed to the eye The observer must, however, bear in mind that his judgment may be influenced by certain conditions of ground, light, etc., which are mentioned below.

(a) *Objects are overestimated*—

When kneeling or lying
When both background and object are of a similar colour
On broken ground.
When looking over a valley or undulating ground in dull or foggy weather.

(b) *Objects are underestimated*—

When the sun is behind the observer.
In bright light or clear atmosphere
When both background and object are of different colours
When the intervening ground is level or covered with snow.
When looking upwards or downwards.
When the object is large

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II. *Appearance* —The appearance of men in different positions, and of objects of known size, is studied and noted, at various distances and under all conditions of light, background, etc

The following points should be noted.—

(a) The apparent height of the object.
(b) Appearance of the heads and shoulders of men.
(c) Distinctness of outline.
(d) Distinctness of the face, hands, rifle and head-dress.
(e) Movements when loading and firing.

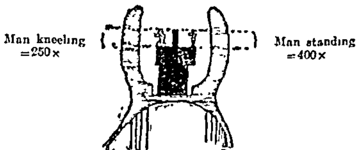
Appearance varies with the eyesight of individuals; a classification range is suitable for the early lessons.

Opportunities for revising the impressions of the appearance of men at various distances should be given.

Although it is recognized that no hard-and-fast rules can be laid down, owing to the varying strength of men's eyesight, rapid progress has been made by normal-sighted men when acting upon the following rules.—

i. At 200 yards. All parts of the body are distinctly seen.
ii. At 300 yards. The outline of the face is slightly confused The buttons resemble a stripe.
iii. At 400 yards Outline of body remains normal but the face is not seen except under favourable circumstances
iv. At 500 yards. The body begins to taper slightly from the shoulders Movements of the limbs are discernible
v. At 600 yards. The head appears a mere dot, details are no longer distinguishable; tapering of the body very noticeable.
vi. It is useful to know that when the rifle is held in the aiming position the *blade* of the *foresight* covers a man standing at 400 yards and a man kneeling at 250 yards.

Fig. 5.



III. *Bracketing.*—Decide on the longest distance the object can be, decide on the shortest distance the object can be; take the mean

IV. *Halving.*—Judge the distance to a point considered to be half way and double this estimate.

V *Key ranges* —Judging by the aid of some known distance or with the assistance of range cards or maps.

VI. *The mean (or average)* —Add together the distances estimated by the various men judging, divide the result by the number judging Ignore obviously incorrect estimates

Note —As progress is made the time allowed for judging distances should be limited, but guessing is never to be allowed Reasons for estimates and the method used will always be given.

27. *Lateral judging distance.*

1 All officers, non-commissioned officers and scouts should know some measurement which will cover laterally one-tenth of a forward distance. measurement can be obtained by covering 10 yards at 100 yards, then applying at longer distances.

2 With the rifle held in the aiming position the *back sight protectors* of the rifle approximately give this measurement

28. *Quarterly judging distance test*

1. This will be carried out by all Cavalry, Royal Engineer Field Units and Infantry.

2 The regulations and method of carrying out the test are as follows.—

(a) *Distances* —Recruits and trained soldiers will judge up to 800 yards; subaltern and non-commission

/c

officers and men in possession of J.D. badges up to 1,400 yards.

(b) *Ground.*—An unfamiliar piece of ground will be selected for the test and the distances selected should be such as to approximate closely some multiple of 50 yards.

(c) *Aids* —No assistance from maps or other means will be allowed.

(d) *Objects to be judged on:*—

Four objects will be judged on

Two will be natural objects, such as likely hostile fire positions

Two will be men who will show themselves and fire three rounds of blank ammunition when called up by signal

(e) *Estimates, how given* —

Always in multiples of 50 yards.

Officers write down their estimates

Other ranks adjust their sights to the estimated distance

(f) *Time limits* —Half a minute will be allowed for each estimate The time will be taken from the end of the verbal indication in the case of each of the two natural objects, and from the sound of the third shot fired in the case of each of the two objects represented by men firing blank At the conclusion of the time limits a whistle will be blown, when those judging distance will stand to attention, and no further writing or adjustment of sights *will* be *permitted.*

(g) The register keeper will then examine each paper and the sights of each rifle, and record the estimates in the register (A F B 186)

On return to barracks the mean percentage of error will be worked out for each individual who took part in the test, and entered up in the register, which will be preserved for record.

(h) *Standard of efficiency* —In order to qualify, the mean percentage of error of an individual must not exceed 20 per cent

(i) All ranks whose mean error exceeds 20 per cent, or who have attended less than two tests in the year, will be regarded as inefficient and will be given extra instruction in this subject

29. *Range cards*

1 These are of two kinds —

(a) For use in the attack

(b) For use in the defence

Any available method such as range finding instruments, maps, information from Lewis or Vickers machine gunners, field artillery, etc, should be made use of for obtaining the correct ranges

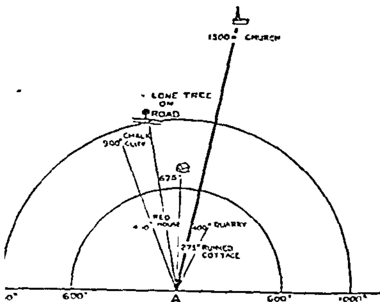
2 *Attack range card* —The successive steps are as follows —

(a) Ranges to be taken in *direct* line of advance.

(b) Draw two parallel lines and fill in *Starting Point* and *Objective*.

(c) Take or estimate range to the *objective* and write in right-hand column.

Fig 6.



Range Card in Defence.

"A" Taken from right end of York Trench. By B. & S. Rangefinder. Made out by Sgt. Brown. 21/3/17.

(*d*) Select some object about half way to the *objective* and enter its range in right-hand column. Select and take ranges to other intermediate objects, choosing those which will be easily recognised when reached and which appear to be near a probable fire position

(*e*) A simple subtraction sum will give the range from each successive object to the *objective*. Enter the ranges so obtained in left-hand column and strike out those in the right-hand column.

0	Objective (described)		1700
100		Small Wood	1600
700	Ruined Farm		1000
900		Mound, Bush on Top	800
1300	Line of Poplars		400
1700	Starting Point (described)		0

3 *Defence range card* -- The successive steps are as follows —

(*a*) Mark off on the card the position from which the ranges are taken

(*b*) Describe position accurately.

(*c*) Select an unmistakable object and draw a *thick* setting ray to it

(*d*) Draw two semicircles representing 600 and 1,000 yards respectively.

(*e*) Select objects to range on, *e.g.*, positions which the enemy may occupy or have to pass; obstacles, a bridge, a gap in a thick hedge; barbed-wire fences

(f) Keeping the card set on the setting ray, *draw rays* to show the direction of objects and of lengths corresponding to the distances

(g) Write short descriptions in horizontal block lettering or draw representations.

(h) Write the distance to each object against the description

Notes.—i Avoid too many rays, which are apt to become confusing.

ii When possible, make one ray do for more than one object

4. Fig 6 shows an example of a range card made for use in defence The ranges in this case are supposed to be taken from the point A. The direction line from A to the church is drawn thicker than the other lines to facilitate "setting" the range card in the same manner in which a map is set When the card is set for the point from which the ranges are taken—which is noted on the card—by pointing the thick direction line on the church, the other direction lines will indicate the direction and the ranges of the other points marked on the card

5. The point from which the ranges are taken should always be described clearly on the card to facilitate setting it.

30. *Application of fire.*

1. "*Fire Organization*" is arranged by the higher command to secure co-operation in the fire of various arms and units.

2. "*Fire Direction*" is the term applied to instructions, given by an officer or non-commissioned officer commanding

more than one fire unit to their fire unit leaders, as to how the fire of units is to be applied

3 "*Fire Control*" *orders* are given by fire unit leaders to their men

4 As laid down in Infantry Training, Vol. II, (1921), Chapter I, the normal infantry fire unit is the section. In battle, whether in attack or defence, fire will be controlled by the section leader as long as possible

5 In modern battle, conditions will frequently exist where control by the section commander is difficult or impossible—casualties amongst leaders will occur, situations will arise where no fire orders or only the briefest instructions may be possible, or it may be obvious to all that fire is required, *e.g.*, to beat down a counter-attack Under such circumstances it is necessary that every man of the section should understand and should have been trained how to apply fire to the best advantage A normal system of fire application is required

6 The following simple system of fire application for the section will be instilled into all ranks —

The fire of the men of the section may be applied in two ways—(*a*) concentrated or (*b*) distributed

(*a*) Concentrated fire by the men of a section implies that every man of the section applies his fire to the same point.

(*b*) When distributed fire (*i.e.*, against a linear target such as a line of men or an occupied area) is either called for obviously by the situation, or ordered by the section commander, the men of the section will apply fire in the following manner:—

The limits between which fire is to be distributed having been named or being obvious, each rifleman of the section

will fire at the approximate point between these limits which corresponds to his actual position in the section. Each Lewis gun will fire in groups of short bursts at irregular intervals within these limits.

7. This normal system, which is explained (diagrammatically only) in Plate 16, has the following special advantages:—

(a) It ensures that the fire of each section is distributed over the whole of the target.
(b) It allows any section commander to switch his fire against any other target that the situation may demand whilst the whole of the original target remains under the fire of the other sections.
(c) It allows of movement by one section taking place whilst fire is still applied to the whole target by another or other sections

8 Although this system of fire application is the normal one, the section commander is in no way prohibited from seizing every opportunity that may be offered of directing his fire to the best advantage

31. *Instruction of leaders in fire control orders.*

1. Fire control orders may be of three different kinds.—

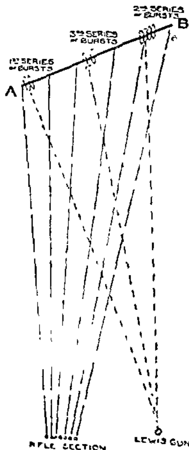
i. Normal.
ii. Brief.
iii. Anticipatory

An example of each is given below

2. Normal fire orders.—A full and complete fire order containing:—

i. Designation of unit, *e.g.*, "No. 5 Section."
ii. Range, *e g.*, "Five hundred."

PLATE 16



SYSTEM OF DISTRIBUTING FIRE.
A, B = Limits indicated by fire unit commander.

iii. Indication, *e.g.*, "Quarter left—gateway—one width right."

iv. Number of rounds, *e.g.*, "Five rounds"

v. Kind of fire, *e.g.*, "Fire," or "Rapid—Fire."

Reasons for the above method:—

i. To make it clear to whom the order is addressed.

ii. The range is given next so that once the men have adjusted their sights they can concentrate their whole attention on recognising the target. Knowledge of the range also limits the area in which they need search for the target.

iii. The indication of the target is given third and includes the direction and description of the target (as already explained in the Section on Visual Training).

Indication for concentrated fire.—The point of aim must be given; this may either be part of the actual target or an auxiliary aiming point. When no special part of the target or auxiliary aiming point is mentioned, the centre of the lowest visible part is intended.

Indication for distributed fire.—The limits between which fire is to be distributed will be named. Each section will distribute within the limits indicated as already explained in Sec. 30, 6 (*b*).

iv. The number of rounds (normally 5) is named in order to control the expenditure of ammunition and to ensure a lull in the firing during which fresh orders can be given if necessary.

v. The kind of fire ordered should be that which the target and the situation at the moment demand.

3 **Brief fire orders** are used when the target is an obvious one and when time does not admit of a full fire order being given, *e g*, "Quarter left, Rapid—Fire", or "300, Half Right, Rapid—Fire"

4 **Anticipatory fire orders** are used in both attack and defence, anticipating either the movements of our own troops or those of the enemy

Examples —

(*a*) *Attack* —"No 5 Section—Four Hundred—Hedge in front of Farm House, No 6 Section is moving up that covered approach on our right We must cover their advance while they cross the bit of open ground—Await my order to fire"

(*b*) *Defence*—"No 3 Section—Five Hundred—Quarter right—Small Wood—when the enemy comes out into the open, open Rapid Fire on my order"

From the above it will be seen that all preparations for opening fire have been made, but the actual opening of fire is withheld until it is required

5 **Fire orders, general.**—Fire orders should be given —

(*a*) i As orders

ii With decision

iii Calmly

iv Loudly

v With pauses (to allow each part to be understood and acted on)

vi Every word must be important.

vii Avoid conversational tone and manner, and unnecessary or confusing detail.

(b) The order **Stop** means reload and wait for orders. The whistle may be used to draw attention.

(c) *Sighting* best changed by "Up (or Down)—100," &c.

(d) *Mutual understanding* between commanders and their men simplifies fire orders

(e) *Rapid fire* is normally used to gain the maximum effect in the minimum time, to obtain surprise effect on a vulnerable target, to cover the movement of a neighbouring section or sections across an exposed piece of ground Hence the aim must be to achieve a practically simultaneous opening of fire. In giving an order for "Rapid —fire," a pause should be made after the word "Rapid" to allow the men to come to the aim; then on the word "Fire," each man will press his trigger when he has got a good aim Rapid fire is aimed fire, and no attempt should be made to obtain a "Volley"

6 **Lewis Gun Section "Fire Control Orders."—**

(a) Unless otherwise stated, a fire control order given to a Lewis Gun Section implies that the gun only will fire

(b) If the leader wants to use his rifle fire at the same target as his gun, he will mention "Gun and Rifles."

(c) If the gun is temporarily out of action, or the leader wishes to engage a target with rifle fire (whether the gun is in action against another target or not) the fire order will be preceded by the word "riflemen."

(*d*) The rate of fire to be used with the gun will be controlled as follows —

If the fire order is —

FIRE—The firer will fire at the rate of 5 bursts a minute.

RAPID—FIRE—The firer will fire in short bursts with just sufficient pauses between bursts to observe the fire and relay aim.

(*e*) The duration of the fire can be controlled in two ways, either by—

i Stating the number of bursts before the order "Fire" or "Rapid—Fire"; or,

ii Not mentioning any definite number of bursts, but merely giving the order "Fire" or "Rapid—Fire," followed by the command "Stop."

NOTES FOR INSTRUCTORS.

Methods of practising fire orders.

1 *Preliminary.*—When practising leaders in fire orders, those under instruction should sometimes be made to write down their orders, so that they can afterwards be discussed by the instructor

2 When exercising leaders and their fire units in fire orders, either landscape targets or open country can be used.

I —Key rifles may be used as follows:—

The instructor has two rifles in aiming rests and uses either one or both as required, *e g.*, *one* when a concentrated fire order is required and *both* for a distributed fire order, one rifle being laid on each end of the target to show the limits of distribution.

(*b*) The order **Stop** means reload and wait for orders. The whistle may be used to draw attention.

(*c*) *Sighting* best changed by "Up (or Down)—100," &c.

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6. **Lewis Gun Section "Fire Control Orders."**—

(*a*) Unless otherwise stated, a fire control order given to a Lewis Gun Section implies that the gun only will fire.

(*b*) If the leader wants to use his rifle fire at the same target as his gun, he will mention "Gun and Rifles."

(*c*) If the gun is temporarily out of action, or the leader wishes to engage a target with rifle fire (whether the gun is in action against another target or not) the fire order will be preceded by the word "riflemen."

(*d*) The rate of fire to be used with the gun will be controlled as follows:—

If the fire order is —

FIRE—The firer will fire at the rate of 5 bursts a minute

RAPID—FIRE—The firer will fire in short bursts with just sufficient pauses between bursts to observe the fire and relay aim

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i Stating the number of bursts before the order "Fire" or "Rapid—Fire", or,

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The instructor has two rifles in aiming rests and uses either one or both as required, *e g., one* when a concentrated fire order is required and *both* for a distributed fire order, one rifle being laid on each end of the target to show the limits of distribution.

A selected fire unit leader then looks along the key rifle rifles and gives his fire order.

The class (also using their rifles in aiming rests or son improvised rests) lay their rifles on what they recognise be the target, and then stand clear.

The instructor then looks along each rifle in turn ar discusses—

i. The fire order given, and

ii. The fire effect that would have been obtained b the class

II.—A second method of practising fire orders, using rest is as follows:—

Concealed men are called up individually and fire blank—meanwhile the class, except the commander, have then backs turned. The men again conceal themselves, th class turn about. The commander gives his fire orders—the class adjust *sights* and lay rifles from rests on th point at which they would have fired. The men are again called up, aims and sights are checked. The fire order and probable effect of fire are then discussed. As progress is made, two men may be called up at a time and orders given for distribution between the points which they mark.

III.—A more advanced exercise in fire orders can be carried out as follows. (In this exercise neither key rifles nor aiming rests will be used).—

The class will occupy a fire position under service conditions, and men equipped with pole targets will represent an enemy platoon in various formations advancing to attack the section in position.

The movements of the men representing the enemy with pole targets can be controlled by whistle and signal by the instructor carrying out the exercise, a previous rehearsal having been carried out to ensure the correct appearances and movements of the target bearers.

Special Notes

1 The above are not tactical exercises, but are framed in order to practise leaders in fire orders. The suitability or otherwise of the orders should be discussed with reference to the nature of the targets, and the following method of discussion is suggested —

When it is found that no fire effect would have been obtained, the fire order should be analysed and the poor result traced either to the class or the faultiness of the fire order, *e g*, was the range given approximately correct? If so, the class have no excuse for looking for the target at any other distance. Was the indication clear and short, or was there room for doubt? Were aids used when there was no necessity for them? Was the volume and rate fire ordered suitable to the target?

2 In all the above exercises, absolute accuracy of aim on the part of the class must be insisted on.

32 *Training in the use of ground and the use of formations.*

1. During firing instruction with the rifle and advanced handling with the light automatic, the soldier will be taught how to modify his firing positions to suit various forms of ground.

Procedure.—The section or party is given a few minutes to study the ground, to decide upon the position from which to shoot, and to consider the best means of getting there. Individuals may then be questioned, and one or more detailed to carry out the practice within a time limit. The instructor and remainder of the party proceed to the objective to view the action of the selected men and will note the good and bad points of execution.

Discussion —On the conclusion, discussion should take place on the following lines —

i The reasons for the line of approach selected.

ii The fire position chosen

iii If risks had to be taken, were they taken early while there was less chance of being seen and hit, or were they taken late?

iv Was full advantage taken of dead ground and cover, both from fire and view?

v Were sky-line, high ground, or unsuitable backgrounds avoided?

II Exercises to teach the combined use of ground and formations.

Note —Commanders will first exercise their units from a drill point of view only, until simple battle formations, deployments, and changes of direction can be rapidly carried out with precision (*See* Infantry Training, Vol. I. (1922) Chapter VIII)

Section stall

Preliminary —As in Exercise I, a definite objective is pointed out from 200 to 800 yards away.

(c) Suitable fire positions and how to approach them.
(d) Formations to use and method of advance
(e) Suitable fire orders to deal with situations that arise

Discussion

i Ground and formations as in Exercise II.
ii The combination of fire and movement
iii. The fire orders of the leaders, and fire discipline of the men, both of the attackers and the defenders.

SPECIAL NOTES

i The remaining two sections of the platoon should act as defenders of the position, as in Exercise II

ii Coloured flags will be found useful in this stage to denote various volumes of fire which the attackers come under during their advance

iii One umpire should be appointed with each attacking section, and also one for the defenders.

GENERAL NOTE REGARDING ALL EXERCISES

Instructors should guard against these exercises developing into a game of "hide and seek" Boldness should be encouraged Crawling should be discouraged by fixing a time limit and should only be allowed for movement over the last two or three yards into a fire position and for concealing movement over stretches of a few yards where exposure would otherwise occur.

The Small Arms School, Hythe.

India.—For information regarding the Small Arms Schools in India see A R, I, Vol II and Courses of Instruction (India).)

33 *Objects of the school*

1. The Small Arms School is established for the following purposes —

i To qualify officers to conduct weapon training in their units and to train selected warrant and non-commissioned officers to act as instructors in the weapons with which their units are armed, namely, rifle, bayonet, revolver, Lewis or Hotchkiss guns, hand, rifle and smoke grenades

ii To study and to teach by demonstration and otherwise the correct technical and tactical handling of these weapons on the battlefield

iii To arrange, carry out and report on such trials of weapons and ammunition as the Army Council may require in order to advance the knowledge of Small Arms generally, and especially to test the suitability or the reverse of any Small Arms or ammunition for use by men of average training under service conditions

iv To advise and report to the Army Council on ranges and training material suitable and necessary for Weapon Training.

v. To study and keep in touch, as far as training in Small Arms is concerned, with the regulations, methods of training and progress in foreign armies.

34. *The Commandant.*

1. The Commandant is responsible for and will report to the Army Council upon all training and trials carried out at the Small Arms School.

2. He will keep in close touch with Commands at Home and abroad, with India, and the forces of the Oversea Dominions on matters connected with Small Arms Training.

He will submit to the Army Council extracts from the Weapon Training reports of General Officers Commanding-in-Chief, together with any statistics and recommendations that he may consider necessary upon results obtained in the annual weapon training courses by troops serving at Home.

3. He will draw up the annual courses and necessary training tests for all Small Arms, except Vickers' machine guns and Tank Hotchkiss guns, and submit them for approval to the Army Council.

4. He is empowered to visit Commands and will report on the standard of Small Arms training in the Commands, and he will keep touch by visits or otherwise with such training establishments as the Staff College, the Senior Officers' School, the Royal Military College, and the Machine Gun School.

5. He will be an *ex-officio* member of the Small Arms Committee.

35. *Courses of instruction.*

1. The yearly programme of courses of instruction to be held at the Small Arms School, with full details and preliminary instructions for all ranks selected to attend such courses, will be published annually in Army Council Instructions.

37. *The Corps of the Small Arms and Machine Gun Schools.*

1. The warrant and non-commissioned officer instructional staff employed at the Small Arms School belongs to the Corps of the Small Arms and Machine Gun Schools

2. Candidates for appointment to this Corps must be serjeants or lance-serjeants and will be finally approved for transfer only if found suitable after a six months' probation at the School

3 Full details as to pay, terms of service, qualifications, etc, can be obtained on application to the Commandant of the Small Arms School

4 A proportion of the personnel of the Corps is employed on instructional duties at the Royal Military College, Sandhurst, and in the Experimental Department of the Director of Artillery and at the Machine Gun School

CHAPTER II.

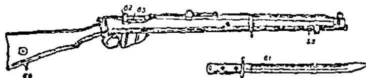
THE RIFLE AND BAYONET.

THE CARE AND MECHANISM OF THE RIFLE.

38. *Care of rifle*

1. Officers commanding platoons are responsible to their company commander for the condition of the arms on their charge, and for instructing their men in the care thereof so that no unnecessary wear of the bore may occur and the arms may be kept in such condition as to be always capable of accurate and rapid shooting.

PLATE 17

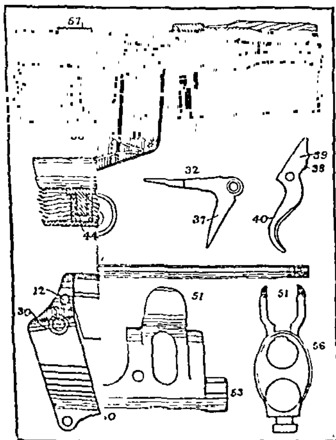


2. **Causes of wear.**—Wear in the *bore* of a rifle is caused by:—

(*a*) Friction of the bullet.

(*b*) Heat due to the explosion.

(*c*) Friction due to the pull-through gauze.


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2. Attendance at the Small Arms School is governed by the King's Regulations.

36. *Record of qualifications*

1. The Commandant will forward to the War Office lists of officers who have attended, showing the results of their examination.

He will also furnish General Officers Commanding-in-Chief and the Deputy Adjutant-General, Royal Marines, with the names of officers, warrant officers and N.C.Os. who have qualified, and with the names of those who have failed.

3. The names of those who have qualified will be published in Command or District Orders and the qualification entered in their records of service. The particular weapons in which qualification has been obtained should be carefully stated.

4. Officer students attending a qualifying course will be classed as:—

Distinguished
Qualified I
Qualified II.
Failed.

5. Warrant Officers and N.C.Os. attending a qualifying course will be classed as:—

Distinguished
Qualified.
Not suitable as an instructor

Plate 20

Names of the Parts of Rifle, Short M.L.E., Mark III, Referred to in Plates 17 to 19.

1. Blade foresight
2 Foresight block
3 Band foresight block
4 Key ,, ,,
5. Crosspin ,, ,,
5A Backsight bed
6 ,, ,, crosspin
6A ,, ,, sight spring screw
7. Backsight leaf
8 ,, slide
9. ,, slide catch
10 ,, fine adjustment worm wheel
10A Windgauge
10B. ,, screw.
11. Backsight ramps
12. Seating for safety catch
13. Safety catch.
14 Locking bolt stem.
15 Bolt
16 ,, head
17. Striker
18 Cocking piece.
19 Striker collar with stud
20. Bolt head tenon
21. Cocking piece locking recesses
22 Locking bolt.
23. ,, ,, flat.
24 ,, ,, thumb-piece
25. ,, ,, aperture sight stem.
26 Locking bolt stop pin recesses.
27 ,, ,, safety catch stem
28 ,, ,, ,, ,, arm.
29 ,, ,, screw threads.
30. ,, ,, seating
31 Bolt cam grooves.
32. Sear
33 ,, seating
34 ,, spring
35 Magazine catch.
36 Full bent of cocking piece
37 Short arm of sear
38 } Trigger ribs
39 }
40 Trigger
41 ,, axis pin
41A Magazine case
41B. ,, Platform spring
41C. ,, auxiliary ,,
42 Guard trigger
43 Stock fore-end
44 Spring and stud fore end
45 Protector backsight.
46 Handguard, front and rear
47. Spring handguard, rear.
48 Lower band groove.
49 Lower band
50 Nosecap
51. Protector foresight.
52 Sword bar
53 Boss for ring of sword bayonet crosspiece
54 Swivel seating
55 ,, piling
56 Nosecap barrel opening
57 Inner band
58 ,, ,, screw.
59 ,, ,, ,, spring.
60. Butt sling swivel.
61. Sword bayonet, pattern '07, Modified.
62. Bridge charger guide
63. Cut-off.

necessary to locate it No attempt must be made. by the soldier to remove this form of fouling; the rifle should be taken to the armourer.)

(i) Boiling water is an effective method to remove internal fouling Its action is to open the pores of the steel and allow the harmful matter to be removed by the flannelette on the pull-through This method should always be used when possible

(ii) Superficial fouling can be readily removed when the *barrel* is still warm by the use of the flannelette on the *pull-through*

(iii) If internal or superficial fouling is allowed to remain in the *bore*, it will harden and turn to red rust; to remove which it may be necessary to use the wire gauze.

(iv) The surest method of preventing rust is to keep the interior of the *bore* covered with a film of oil, which prevents the moisture of the air attacking the steel, and to remove the fouling immediately after firing and before it has time to harden and form rust

Rust attacks a rough surface more readily than a smooth one and consequently a *bore* that has once become rusty will require more care than one that has been carefully looked after

Barrels will therefore always be kept slightly oily (see para. 6 of this section) except—

- **(a) Immediately before firing;**
- **(b) At inspections in barrack rooms, when dry barrels may be ordered.**

4 Cleaning materials.

(a) The *Pull-through*, which will be kept in the *butt trap* of the rifle, is provided with three loops The first loop (the

one nearest the weight) is for the wire gauze, the secon for the flannelette, and the third for the purpose of remo ing the *pull-through* should it break or get jammed in t *bore*.

If a jam occurs the soldier must not attempt to remo the obstruction but the rifle will be taken to the armoure

i. The *pull-through* will be drawn through the *barr* from *breach* to *muzzle* in one continuous motio

ii The cord must be drawn straight through and no allowed to rub against the *muzzle* of the *bor* otherwise it will cause a groove to be worn wher it rubs, this is known as "cordwear" and affect the accuracy of the rifle.

iii The *pull-through* will be packed in the *butt tra* as follows —Hold the *pull-through* (loop end between the forefinger and thumb, so that th end falls about 2 inches below the third finger roll it loosely three times round the fingers Sli the coil off the fingers, and twist the remainde of the cord tightly round it, leaving sufficient to allow the *weight* to drop easily into the recess made for it in the *butt*. Push the cord into the *trap* leaving the loop end uppermost, and close the *trap*

(*b*) Oil.—Service oil is carried in the oil bottle for which a recess in the *butt trap* is provided No other form of lubricant is to be allowed to remain in the *bore*. Paraffin, though an effective agent for removing rust, will not prevent it.

(*c*) Flannelette.—No other form of material will be used for cleaning the *bore*. For cleaning the *bore* (or for drying it) after firing, a piece of flannelette large enough to fit the

bore tightly, 4 inches by 2 inches, will be used. It will be placed in the second loop of the *pull-through* and wrapped round the cord

For oiling the *bore* a slightly smaller piece of flannelette will be used. If the piece used is too big, the oil will be scraped off as it enters the *bore*. The oil should be well rubbed, with the fingers, into the flannelette

(*d*) **Stick cleaning chamber,** made of wood about a foot long, at one end a slot is cut, the other end is cut square to allow a grip to be taken and the stick to be turned by hand. A piece of dry flannelette is placed in the slot and wound round the stick (to ensure that the stick is covered). The stick is then passed through the boltway into the *chamber* and turned round several times. This is the only effective method of cleaning the *chamber*.

(*e*) **Wire gauze,** in pieces 2½ inches by 1¼ inches, is supplied and, except on active service, should only be used with the permission of an officer for the purpose of removing hard fouling or rust

In attaching it to the *pull-through* the following method will be adopted —

i. Fold the gauze as in diagram Fig. 7, so that the longer sides take the form of an "S"

ii. Open the first loop of the *pull-through* and put one side of it in each loop of the "S."

iii. Then coil each half of the gauze tightly round that portion of the cord over which it is placed until the two rolls, thus formed, meet

The gauze must be thoroughly oiled before use and care taken to ensure that there are no loose strands of wire which may scratch the *bore*. The gauze will fit the *bore*

one nearest the weight) is for the wire gauze, the secon for the flannelette, and the third for the purpose of remov ing the *pull-through* should it break or get jammed in th *bore.*

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To replace the *bolt* —

i Ensure that the number on the *bolt* and on the right of the *body* of the rifle correspond.

ii See that the *resisting lug* and the *cocking-piece* are in one straight line and that the *bolt head* is screwed home

iii Place the *bolt* in the *body* with the *extractor* uppermost and press it forward until the *head* is clear of the *resisting shoulder*

iv Press the *bolt head* down until it is caught by the *retaining spring*.

v Close the *breech*, ensuring that the *bolt lever* is down, press the *trigger* and apply the *safety catch*

To remove the *magazine*, depress the *magazine catch* inside the *trigger guard* and withdraw the *magazine*

To remove the magazine platform —

i Depress the rear end of the *platform* as far as possible, at the same time holding up the front end

ii Pull the front end towards the rear end of the *case* until it passes under the *front lips* The front end of the *platform* should then rise out of the *case*

iii Tilt the rear end of the *platform* sideways, *left* side uppermost and draw it forward out of the *case*.

To replace the *magazine platform* —

i Insert the rear end of the *platform* in front of the *rear lips* of the *case*, tilting it sideways so that the right side enters first.

To replace the *bolt* —

i Ensure that the number on the *bolt* and on the right of the *body* of the rifle correspond.

ii See that the *resisting lug* and the *cocking-piece* are in one straight line and that the *bolt head* is screwed home

iii Place the bolt in the *body* with the *extractor* uppermost and press it forward until the *head* is clear of the *resisting shoulder*

iv Press the *bolt head* down until it is caught by the *retaining spring*

v Close the *breech*, ensuring that the *bolt lever* is down, press the *trigger* and apply the *safety catch*

To remove the *magazine*, depress the *magazine catch* inside the *trigger guard* and withdraw the *magazine*.

To remove the *magazine platform* —

i Depress the rear end of the *platform* as far as possible, at the same time holding up the front end.

ii Pull the front end towards the rear end of the *case* until it passes under the *front lips* The front end of the *platform* should then rise out of the *case*

iii Tilt the rear end of the *platform* sideways, left side uppermost and draw it forward out of the *case*

To replace the *magazine platform* —

i Insert the rear end of the *platform* in front of the *rear lips* of the *case*, tilting it sideways so that the right side enters first.

tightly and will, if necessary, be packed with a small piece of flannelette or other soft material to ensure it so fitting

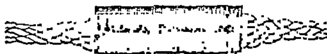
The gauze should not be allowed to remain on the *pull-through* except on active service when it will provide the normal means of cleaning the *bore*

FIG 7

WIRE GAUZE FOLDED.



SECTION



ON PULL-THROUGH.

5. **Before cleaning the rifle** the *bolt*, *magazine* and *sling* will be removed from the rifle and placed on a clean spot.

To remove the *bolt* —

- i. Raise the *knob* as far as it will go.
- ii. Draw back the *bolt head* to the *resisting shoulder*, and release it from the *retaining spring*.
- iii. Raise the *bolt head* as far as possible and remove the *bolt* by drawing it backwards

a piece of oily flannelette. The bore will be found to require special care during the three days following firing.

viii On active service, where boiling water is not normally available, the wire gauze will be used.

ix Care must be used to prevent the browning from being rubbed off the rifle, as this is a great preventative against rust.

(d) Cleaning after firing blank or ballistite.—After firing blank ammunition, including ballistite, special care should be taken that the cleaning is thorough. Although in this case there is no friction between bullet and bore, and so no internal fouling or "sweating," there is greater accumulation of superficial fouling from blank than ball cartridges, because there is no bullet in blank ammunition to remove the fouling left by the preceding round. The firing also is in most cases more prolonged and a greater interval must usually elapse before the rifle can be thoroughly cleaned. When blank firing precedes practice with ball the rifle will be carefully cleaned before ball practice commences.

(e) Cleaning after firing tracer.—After firing tracer ammunition the rifle must be cleaned similarly as after firing ball.

7. Cleaning 22-inch rifle.—In order to avoid damage to the bore of these rifles when cleaning, and thus to ensure the high accuracy necessary for training, the following instructions will be strictly adhered to:—

i The rod, brush and cleaner will always be inserted from the breech end (the breech bolt having been removed) so that the muzzle end of the [illegible] cannot be damaged by the friction of the

ii. The bore should be cleaned after firing 60 rounds (*not oftener*) with the rod and cleaner with a strip of flannelette ½-inch *wide in the eye.*

iii. On the conclusion of firing, the rod, with brush attached, should be passed up and down the bore a few times, then remove the brush and attach the cleaner with strip of flannelette ½-inch wide in the eye, this will be passed up and down the bore in a similar manner, the flannelette being replaced until the bore is rag clean. After cleaning, the bore should be lubricated by using a ⅜-inch wide strip of flannelette well soaked in oil. This oil should be removed with dry flannelette before firing is again commenced.

iv. The brush should be frequently cleaned with "Oil, mineral, burning" (paraffin), to free it from fouling.

NOTE.—Care should be taken to observe that the rod, brush or cleaner are not bent or allowed to come in contact with dust or grit as carelessness in this respect will cause friction and damage the bore.

8. **General notes on care of rifle.**—(*a*) When the rifle is not in use, the *leaf* and *slide* of the *backsight* should be lowered.

(*b*) The *mainspring* should never be allowed to remain compressed except when the rifle is loaded. The position of the *cocking-piece* shows whether the *mainspring* is compressed or not.

(*c*) The *magazine* must not be removed from the rifle except for cleaning purposes or as laid down in Sec. 38, 3, and, to avoid weakening the *spring*, cartridges should only be kept in it when necessary. A failure of the *spring*

to raise the *platform* can usually be overcome by tapping the bottom of the *magazine* smartly with the palm of the hand. If the failure recurs, the rifle should be taken to the armourer for examination and repair.

(*d*) The *bolts* of rifles are not to be exchanged Each *bolt* is carefully fitted to its own rifle, so that the parts which take the shock of the explosion have an even bearing, and the use of a wrong *bolt* may affect the accuracy of the rifle The number stamped on the back of the *bolt lever* should agree with that stamped on the right front of the *body*

(*e*) No N C O or soldier is permitted to take to pieces any portion of the *action*, except as prescribed for cleaning, nor is he to loosen or tighten any of the screws.

39. *Protection of weapons and equipment from gas.*

1 If weapons or equipment have been splashed with mustard gas, chloride of lime may be used to disinfect them. Any dirt should first be removed as far as possible, and the surface to be cleaned will be sprinkled with a thin layer of chloride of lime This should be washed off after 15 to 20 minutes and the object rinsed thoroughly with water Parts which cannot be treated with the dry powder should be covered with a paste of chloride of lime, which should afterwards be washed off as described above. Any delicate parts of the mechanism (*sights, breech*, etc.) which would be injured by chloride of lime should be cleared by polishing with dry rags The rags must be buried after the operation. They should not be burnt. All cleaned parts should be dried and re-oiled Me [illegible] aled to clean weapons an

equipment suspected of contamination with mustard gas must be provided with anti-gas gloves

2. Certain gases have a corrosive action on metals This action is greatly assisted by moisture, which dissolves and retains the gas, so that corrosion continues until the surface is cleaned Metal surfaces which are covered with mineral oil are not affected, provided they are cleaned and re-oiled after exposure The following precautions should be taken.—

(a) Weapons should be kept oiled, and, after exposure to gas, should be cleaned and re-oiled If exposed to high concentrations of a corrosive gas, they should in addition be stripped at the earliest opportunity and the parts washed in boiling water containing a little soda

(b) S A A may be seriously affected by gas Ammunition boxes should be kept closed

In position warfare, ammunition should be stored in shelters or recesses in the parapet, protected by a moistened curtain.

3. *Action during an enemy gas attack* —The troops armed with the rifle will maintain a slow rate of fire, and occasional short bursts will be fired from machine guns to ensure that all weapons are in working order

Troops in positions where it is not possible or advisable to fire, *e.g.*, supports and reserves, if in the area affected by gas, should close the *cut-off* and occasionally work the *bolt* backwards and forwards.

4. *Action after a gas attack* —(a) Rifles and machine guns must be cleaned after a gas attack Oil cleaning will prevent corrosion for 12 hours, but the first opportunity must

be taken to clean all parts in boiling water containing a little soda

(*b*) S.A.A. must be carefully examined. All rounds affected by the gas must be replaced by new cartridges immediately. They will be cleaned and re-issued immediately so that they can be fired at the first suitable opportunity.

40. *Examination of arms*

1. It is necessary for all company officers and N.C.Os. to possess a competent knowledge of the inspection and care of small arms.

2. Commanding officers will therefore arrange that they shall be instructed annually by the regimental armourer in repairing simple faults likely to occur in the field with such tools as would be available, and in the examination of the various components as directed in the following paras :—

Rifles

- i. The interior of the *barrel* for rust, cuts, bulges and fouling.
- ii. The *foresight*, that the *blade* is not deformed and that the *nose-cap* is not loose.
- iii. The *backsight leaf*, for firmness of the joint; that it is not bent, that the *slide* moves smoothly; that the *thumb-piece* and *fine adjustment worm* work freely and engage in the *rack* on the side of the *leaf*, and that the U is not deformed.
- iv. The *magazine*; that it is not dented, and that the *platform* works freely.

3. The choice should be made after tests carried out in the standing and lying positions, and should be based on the readiness with which the firer brings his rifle up to the *firing position* and aligns his *sights without letting his nose* and mouth come into close proximity to the thumb and fingers of his right hand

4 The *butt* selected should be that which can be used most comfortably whether firing in the correct standing or lying positions

42. *Care of ammunition.*

1. Commanding officers will report in the regimental annual return any defects in the rifles or ammunition on their charge which have not been satisfactorily remedied.

2. **Miss fires.**—A miss fire arises from:—

i A defective cartridge
ii A defective rifle

In case i, the cartridge will be tried in another rifle and if it still fails to fire, a report will be made in accordance with the instructions contained in the "King's Regulations"

In case ii, the rifle will be taken to the armourer for examination

India—For "*King's Regulations*" read "*Equipment Regulations (India)*"

3. **Storage of ammunition.**—Ammunition should be kept perfectly dry and clean, and should not be exposed to extremes of temperature.

4. No cartridges, whether ball, blank, miniature or dummy, other than those supplied by Government, may be used in service rifles.

5. In making reports on defective small arm ammunition in accordance with the King's Regulations, the following definitions will be used:—

i. Burst cases.
ii. *Separations.*
iii. Split cases
iv. Fluted cases
v. Blowbacks
vi Miss-fires

6. Burst cases, as distinguished from separations, may be of two kinds, *viz.*, circumferential or longitudinal, and in reporting them, their position, whether in or above the base, should be clearly stated.

7 Separations are failures which are due to the case being stretched on firing, owing to excessive backward play of the *bolt-head* in the rifle Separations may be partial or complete, and may take place in any part of the case They *are distinguished from bursts by the fact that the torn* edges of the metal are not fused In case of doubt as to whether the casualty is a "burst" or a "separation," the rifle should be overhauled

8. Split cases are those which burst at the *neck or shoulder.*

9. Fluted cases are those in which the powder gas has penetrated between the neck of the *case* and the walls of the *chamber* and has forced the metal inwards

10. A blowback is an escape of gas between the cap and the sides of the *cap chamber.* This term is not to be used to denote an escape of gas due to bursts or other causes

11. The instructions in this section apply to all small arm ammunition.

43. *Mechanism.*

1. *Recruit's mechanism* --To ensure that the recruit has a knowledge of this subject, he will receive instruction in it as soon as he has been issued with his rifle (see Recruit's Initial Lesson) This ensures that the recruit will know how to remove and replace certain parts of his rifle without damaging them in any way It is unnecessary to mention the weights or measurements of rifles or bayonets.

2. Instruction will be given in the following —

(a) How to remove the *bolt* and *magazine*.

(b) How to remove the *magazine platform*.

(c) How to replace the *magazine platform*

(d) How to replace the *bolt* and *magazine* (*See Note.*)

(e) Always to see that the *bolt lever* is in the lowest position before applying the *safety catch*.

(f) Half cock and how to re-cock

Note --When teaching recruits how to replace their *bolts*, the following points will be brought out —

He *should always see that* —

i He has got his own *bolt*

ii. *Bolt-head* is screwed fully home

iii. *Cocking-piece* and *resisting lug* are in one straight line

iv *Safety catch* is forward.

v When applying the *safety catch* with the forefinger, always ensure by the aid of the remaining fingers that the *bolt lever* is as far down as it will go

3 *Trained men's mechanism* —To ensure that trained men have retained their knowledge of mechanism, instructors

will question them on the subject, *e.g.*, "Explain how to replace your *bolt*." If the man does not know he must have further instruction; should he make only a slight mistake, the instructor will point this out at once.

4. The instructor should only question the men on what has been taught to them as recruits, he should not be satisfied with a verbal answer, he should make the men actually perform whatever he requires them to do

5. *Instructors' mechanism*.—Officers, W.Os. and N.C.Os must have a thorough knowledge of the *breech mechanism* of their rifles. It is necessary that they should know the different parts of the *bolt*, *striker*, etc., that move when the *bolt lever* is raised, drawn back, and so on In teaching this subject, instructors will find the *skeleton action* most useful, and dummy cartridges should be used. By this means the young officer or N.C.O. will be able to see exactly what takes place on each movement

6. *Action of the mechanism*.—On raising the *bolt lever*, the *bolt* is rotated to the left, thereby forcing the *stud* on the *cocking-piece* to move backward from the *long* to the *short groove* in the rear end of the *bolt*, this action withdraws the *striker* about one-eighth of an inch At the same time, a *steel lug* on the under side of the *bolt* works down an *inclined slot* on the left side of the *body*, withdrawing the *bolt* about one-eighth of an inch and effecting primary extraction.

7. The *charger* containing 5 cartridges is placed between the *guides*, and the cartridges are forced into the *magazine* by the thumb.

8. On pushing the *bolt* forward, the *charger* is thrown out and the *full bent* of the *cocking-piece* is brought against the *nose of the sear*. The *cocking-piece* and *striker* are thus held stationary whilst the *bolt* travels forward, the

mainspring being compressed between the *collar* of the *striker* and the rear end of the *mainspring chamber* in the *bolt*.

9. During the forward movement, the lower part of the *bolt-head* engages behind the upper part of the base of the top cartridge in the *magazine* and pushes the cartridge into the *chamber*

10 On turning the *bolt* to the right, the *breech* is finally closed by the *rib* on the *bolt* working over the *resisting shoulder* on the right side of the *body*, at the same time the *lug on the bolt* works into the *recess* cut on the left side of the *body*

11. On pressing the *trigger* the two *ribs* on the *trigger* bear in succession on the *lower arm* of the *sear* and produce a double-pull off, the first pressure bringing the *nose of the sear* to the bottom of the *bent of the cocking-piece*, and the second pressure finally releasing the *cocking-piece*; the *mainspring* then carries the *striker* forward, exploding the *charge*.

12. The shock of discharge is taken equally on either side of the *body*, on the right, by the *bolt rib* bearing against the *resisting shoulder*, and on the left by the *bolt lug* bearing against the *rear wall* of the *recess in the body*.

13 If the *bolt* has not been properly turned over when the *trigger* is pressed, one of two results will occur:—

i. Either the *stud* [illegible] causes the *breech* to close [illegible] the rounded co[illegible] *two grooves* of the *bolt*, causing the *bolt* to turn down and the *breech* to close.

ii Or the *stud on the cocking-piece* strikes full against the division between the two *grooves*, and prevents the *striker* flying forward.

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7. The *charger* containing 5 cartridges is placed between the *guides*, and the cartridges are forced into the *magazine* by the thumb.

8. On pushing the *bolt* forward, the *charger* is thrown out and the *full bent* of the *cocking-piece* is brought against the *nose of the sear*. The *cocking-piece* and *striker* are thus held stationary whilst the *bolt* travels forward, the

mainspring being compressed between the *collar* of the *striker* and the rear end of the *mainspring chamber* in the *bolt*.

9 During the forward movement, the lower part of the *bolt-head* engages behind the upper part of the base of the top cartridge in the *magazine* and pushes the cartridge into the *chamber*.

10. On turning the *bolt* to the right, the *breech* is finally closed by the *rib* on the *bolt* working over the *resisting shoulder* on the right side of the *body*, at the same time the *lug on the bolt* works into the *recess* cut on the left side of the *body*

11. On pressing the *trigger* the two *ribs* on the *trigger* bear in succession on the *lower arm* of the *sear* and produce a double-pull off, the first pressure bringing the *nose of the sear* to the bottom of the *bent of the cocking-piece*, and the second pressure finally releasing the *cocking-piece*; the *mainspring* then carries the *striker* forward, exploding the *charge*.

12 The shock of discharge is taken equally on either side of the *body*, on the right, by the *bolt rib* bearing against the *resisting shoulder*, and on the left by the *bolt lug* bearing against the *rear wall* of the *recess in the body*.

13. If the *bolt* has not been properly turned over when the *trigger* is pressed, one of two results will occur:—

i. Either the *stud on the cocking-piece* causes the *breech* to close automatically by striking against the rounded corner of the division between the *two grooves* of the *bolt*, causing the *bolt* to turn down and the *breech* to close;

ii Or the *stud on the cocking-piece* strikes full against the division between the two *grooves*, and prevents the *striker* flying forward.

mainspring being compressed between the *collar* of the *striker* and the rear end of the *mainspring chamber* in the *bolt*.

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12 The shock of discharge is taken equally on either side of the *body* on the right by the *bolt rib* bearing against the *resisting shoulder*, and on the left by the *bolt lug* bearing against the *rear wall of the recess in the body*.

13 If the *bolt* has not been properly turned over when the *trigger* is pressed, one of two results will occur.—

i. Either the *stud on the cocking-piece* causes the *breech* to close automatically by striking against the rounded corner of the *division* between the *two grooves* of the *bolt* causing the *bolt* to turn down and the *breech* to close;

ii Or the *stud on the cocking-piece* strikes full against the division between the two *grooves*, and prevents the *striker* firing forward.

—

If the *bolt* is then closed by hand, the whole *action* becomes locked as the *sear nose* is engaged by the *half bent*, which is under-cut, whilst the *cocking-piece stud* travels half-way down the *longer groove* The result is that the *trigger* cannot be pressed, nor can the *bolt* be rotated, until the *action* is placed at full-cock by drawing back the *cocking-piece*.

14. On opening and drawing back the *bolt*, the cartridge case is drawn out of the *chamber* by the *extractor* and is ejected. To ensure perfect ejection, an *ejector screw* is fitted on the left inside the *bolt way*

15. The *safety catch* may be used when the *cocking-piece* is either at full-cock or in the fired position. When the *safety catch* is applied the *cocking-piece* cannot be moved backward or forward, nor the *bolt* be rotated. Care should be taken to see that the *bolt lever* is as far down as it will go before applying the *safety catch*

16 Instruction will also be given in the means of safety on the rifle —

(a) *Gas escapes*

(b) Two *studs* (on *bolt* and *cocking-piece*)

(c) Half cock

Recapitulation of Care and Mechanism of the Rifle in the Form of Notes for the Instructor.

Recruit's Initial lesson.

. Object.—So that recruits will not develop bad habits before commencing rifle training parades.

Subjects.—(To be taught immediately recruits receive their rifles) —

(*a*) Teach the man how to recognise his own rifle.

(*b*) (i) Loading
(ii) Unloading
(iii) Charging magazines.
(iv) Trigger pressing (*see* Sec 55).
(v) Recruits' mechanism (*see* Sec. 43)

(*c*) Daily cleaning. Instructor demonstrates the following points The section imitates him —

i How to remove oil bottle and pull-through from the *butt trap*

ii How to remove the *bolt* and *magazine* (put in a clean place)

iii See that the *weight* of the *pull-through* is not bent, run cord through fingers to see that it is not worn, to straighten it out and to remove any grit

iv Work oil into flannelette with forefinger and thumb

v Oil the *barrel* by pulling through from *breech* to *muzzle*, a straight pull without pause.

vi Clean outside of rifle with an oily rag, instructor mentioning main parts of rifle.

vii How to replace the *bolt* and *magazine*.

viii. How to replace the oil bottle and pull-through in the *butt trap*

Note.—This method of cleaning is to be carried out daily by every man from the time he is issued with his rifle.

Subjects.—(To be taught immediately recruits receive their *rifles*).—

(a) Teach the man how to recognise his own rifle

(b) (i) Loading
(ii) Unloading
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iv. Work oil into flannelette with forefinger and thumb.

v. Oil the *barrel* by pulling through from *breech* to *muzzle*, a straight pull without pause.

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If the *bolt* is then closed by hand, the whole *action* becomes locked as the *sear nose* is engaged by the *half bent*, which is under-cut, whilst the *cocking-piece stud* travels half-way down the *longer groove*. The result is that the *trigger* cannot be pressed, nor can the *bolt* be rotated, until the *action* is placed at full-cock by drawing back the *cocking-piece*.

14. On opening and drawing back the *bolt*, the cartridge case is drawn out of the *chamber* by the *extractor* and is ejected. To ensure perfect ejection, an *ejector screw* is fitted on the left inside the *bolt way*.

15. The *safety catch* may be used when the *cocking-piece* is either at full-cock or in the fired position. When the *safety catch* is applied the *cocking-piece* cannot be moved backward or forward, nor the *bolt* be rotated. Care should be taken to see that the *bolt lever* is as far down as it will go before applying the *safety catch*.

16. Instruction will also be given in the means of safety on the rifle:—

(*a*) *Gas escapes*.

(*b*) Two *studs* (on *bolt and cocking-piece*).

(*c*) Half cock.

RECAPITULATION OF CARE AND MECHANISM OF THE RIFLE IN THE FORM OF NOTES FOR THE INSTRUCTOR.

Recruit's initial lesson.

Object.—So that recruits will not develop bad habits before commencing rifle training parades.

jects.—(To be taught immediately recruits receive rifles).—

Teach the man how to recognise his own rifle.

(i) Loading
(ii) Unloading.
(iii) Charging magazines.
(iv) Trigger pressing (*see* Sec 55).
(v) Recruits' mechanism (*see* Sec. 43)

Daily cleaning Instructor demonstrates the following points The section imitates him —

i How to remove oil bottle and pull-through from the *butt trap*.

ii. How to remove the *bolt* and *magazine* (put in a clean place)

iii See that the *weight* of the *pull-through* is not bent, run cord through fingers to see that it is not worn, to straighten it out and to remove any grit.

iv Work oil into flannelette with forefinger and thumb

v. Oil the *barrel* by pulling through from *breech* to *muzzle*, a straight pull without pause.

vi. Clean outside of rifle with an oily rag, instructor mentioning main parts of rifle.

vii. How to replace the *bolt* and *magazine*.

viii. How to replace the oil bottle and pull-through in the *butt trap*

Note —This method of cleaning is to be carried out daily by every man from the time he is issued with his rifle.

If the *bolt* is then closed by hand, the whole *action* becomes locked as the *sear nose* is engaged by the *half bent*, which is under-cut, whilst the *cocking-piece stud* travels half-way down the *longer groove*. The result is that the *trigger* cannot be pressed, nor can the *bolt* be rotated, until the *action* is placed at full-cock by drawing back the *cocking-piece*.

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v. Oil the *barrel* by pulling through from *breech* to *muzzle*, a straight pull without pause.

vi Clean outside of rifle with an oily rag, instructor mentioning main parts of rifle.

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viii How to replace the oil bottle and pull-through in the *butt trap*.

Note —This method of cleaning is to be carried out daily by every man from the time he is issued with his rifle.

Lesson 2.—Materials and wear.

Explain importance.—Unless the rifle is kept perfectly clean the *best results will not be obtained either on the* range or on active service

Subjects—

I.—Materials.

(*a*) Oil bottle containing service oil.

(*b*) Flannelette 4-in by 2-in for cleaning the barrel, 4-in by 1½-in for oiling purposes.

(*c*) *Pull-through*

(*d*) Gauze

(*e*) Stick cleaning chamber

II.—Materials. How used

(*a*) **Pull-through and its uses.**

i. Explain the three loops—weight

ii. Always insert from the *breech* end.

iii. Pull through straight from *breech* to *muzzle* and do **not pause.**

iv. Flannelette in middle loop must surround the cord.

(*b*) **Gauze. When used.**

i. On active service it is issued on the pull-through.

ii. At other times, when necessary to remove hard fouling after obtaining permission of an officer.

Lesson 2.—Materials and wear.

Explain importance.—Unless the rifle is kept perfectly clean the best results will not be obtained either on the range or on active service

Subjects—

I.—Materials.

(a) Oil bottle containing service oil

(b) Flannelette 4-in by 2-in for cleaning the barrel; 4-in by 1½-in for oiling purposes

(c) Pull-through

(d) Gauze

(e) Stick cleaning chamber

II.—Materials. How used

(a) **Pull-through and its uses.**

i. Explain the three loops weight

ii. Always insert from the *breech* end.

iii. Pull through straight from *breech to muzzle* and do **not pause.**

iv. Flannelette in middle loop must surround the cord

(b) **Gauze. When used.**

i. On active service it is issued on the pull-through.

ii. At other times, when necessary to remove hard fouling after obtaining permission of an officer

(c) When blank firing precedes practice with ball, the rifle (*bore*, *magazine* and face of *bolt*) should be cleaned before firing with ball ammunition.

(d) If rifle cannot be cleaned at once the *bore* should be oiled and the rifle cleaned at the first opportunity.

III.—Care of rifle (general points).

i. *Leaf* of the *backsight* lowered when not in use.

ii. *Mainspring* of the *bolt* not compressed unnecessarily.

iii. Dummies not to be left in the *magazine* after parades.

iv. *Bolt* will never be exchanged.

v. No unnecessary rubbing of browned portions.

vi. Screws on rifle not to be touched.

vii. No material other than that issued from store to be used in cleaning the rifle.

Lesson 4.—Cleaning in the Field, and Jams.

Subjects—

I.—Cleaning in the Field.

(a) Rifle (*see* Sec. 38).

(b) Ammunition (*see* Sec. 42).

(c) Precautions against gas (*see* Sec. 39).

II.—Jams.

Causes:

i. Faulty manipulation of the *bolt*.

ii. Dirt or oil in the *magazine*.

iii. Dirty, damaged or defective ammunition.

iv. Some mechanical defect (worn or damaged p

(g) Empty case remaining in the *bolt way*.

To remedy

1 Remove by turning the rifle over to the right.

(h) Miss-fire

To remedy.

Reload If miss-fire recurs, examine *striker*.

Kit required —Rifle and dummy cartridges.

Lesson 5.—Mechanism and Examination of Arms.

Subjects—

I **Mechanism.**

(a) Trained men (*see* Sec **43**, 3)
(b) Instructors (*see* Sec. **43**, 5)

II - **Examination of arms.**

Officers, W Os and N C Os only (*see* Sec **40**).

i. The *backsight* must be kept upright.

ii The left eye (if as is normal the man shoots from the right shoulder) must be closed In the opposite case the right eye must be shut.

iii. Aim will be taken by aligning the *sights* on the centre of the lowest part of the mark, the top of the *foresight* being in the centre of, and in line with, the shoulders of the U of the *backsight*.

4 When these principles have been mastered, the instructor will loosen the *sling*, adjust the *sights* for any given range and aim from a rest at the target, taking care that his eye is immediately above the *butt-plate* It will be convenient to use a sandbag on a tripod to steady the head during the aiming Having aimed, he will call on each individual to observe the correct method of aligning the *sights* on a mark Each recruit will then act similarly, when the instructor will examine the aim, point out errors, and explain how they would have affected the accuracy of the shot, and how they are to be avoided He should occasionally call on a man to point out any errors which may have been made by his comrades

5 Extreme accuracy of aim must be insisted on even during the first lesson.

46 *Common faults in aiming*

1. The most common faults in aiming are:—

i Taking too much, or too little, *foresight* into the U of the *backsight*, causing the bullet to strike high or low respectively.

ii Inaccurate centring, *i.e.*, failure to get the blade of the *foresight* in the exact centre of the U of the *backsight*.

AIMING INSTRUCTION.

INSTRUCTOR'S NOTES.

Lesson 1.—Accuracy of aim.

Preliminary.

1 **Sights.**—The *sights* of all rifles must be in perfect order. They will always be adjusted to the actual distance during this instruction.

2. Each lesson will be repeated as often as necessary until the recruit is proficient, before proceeding to a more advanced one

3 **System of instruction.**—To illustrate principles or check faults a free use will be made of large diagrams on paper, blackboard or ground, by practical illustration with the rifle, and by the use of suitable appliances, *e.g.*, accuracy of aim—paper in front of *muzzle* (*see* Special Note 1 below).

Subjects—

I.—Elementary aiming. Grouping Target.

i Test sights.

ii Explain *sights* and show a correct aim by a diagram

iii Explain the three rules of aiming; the third rule by diagram.

iv Teach how to lay an aim and explain the following —

(*a*) Elbow and head rested.

(*b*) Eye over the heel of the *butt*.

(*c*) Look at mark.

v Let each recruit view aim.

vi Illustrate elevation (using two rifles) by removing *bolts* and laying aims—*sights* being adjusted to 200 and 1,000 yards respectively.

vii. Let each recruit view aims and look through the *bores*, instructor bringing out the following:—

(*a*) *Sights* 200.—*Sights* and *bore* are pointing at mark.

(*b*) *Sights* 1,000.—*Sights* on mark, *barrel* elevated to allow for fall of bullet.

viii. Recruits lay aims; instructor checks, only dealing with faults as they occur.

ix. Teach and give the section practice in adjustment of *sights*.

II.—Aiming at "Small" and "Large" and Silhouette figure targets 200 to 600 yards.

i. When the recruits can lay an aim at the grouping target, proceed with "Small" and then "Large" targets, afterwards with "silhouette figure" targets.

ii. Instructor shows a correct aim at each target before the recruits aim.

iii. Check faults as for grouping target.

SPECIAL NOTES

1. When checking, for inaccurate centring or elevation, the aim laid by a recruit, the instructor must always get his eye in the correct position and his head rested. If the aim is found to be incorrect, make the recruit look at it again; if he sees it is wrong, let him lay another, but if he still thinks it is correct, call another recruit to look at the aim. Should this recruit see that the aim is wrong, and fail to convince the recruit who laid the aim, the instructor must convince him by holding a piece of white paper in front of the *muzzle*. Let the recruit who laid the incorrect aim get behind the rifle

and (making sure he has a correct position) the instructor tells him to get the tip of the *foresight* in line with the shoulders and in the centre of the U of the *backsight*. Then remove the paper quickly, replacing it after a short pause, and ask the recruit where his aim was. This will usually convince the man that his aim was incorrect

2 **Common faults.**

i. Inclined *sights* Illustrate.
ii Inaccurate centring of *foresight*.
iii. Varying amount of *foresight*. Illustrate (ii) and (iii) with paper method if necessary.
iv Focussing the *sights* instead of the mark

3 **Reasons for aiming at the centre of the lowest part of the mark.**

i. Whole mark is kept in view
ii. Better chance of hitting a vanishing target.
iii. Counteracts tendency to shoot high.
iv. Assists close grouping in collective fire.

4 **Reasons for full sight.**

i Less chance of varying amount of *foresight*.
ii Facilitates a rapid aim.

Kit required.—Grouping target. Small, large, and silhouette figure targets, 200 yards to 600 yards Aiming rest. Tripod. Sandbag Paper and pencil.

48. *Aiming off for wind.*

1. The recruit should be taught to discriminate betw mild, fresh, and strong winds, by means of the effect whic they exercise on natural objects, *e.g.*, trees, grass. / I

AIMING INSTRUCTION

INSTRUCTOR'S NOTES.

Lesson 2.—Aiming off for wind.

Subjects—

I.—Small *Aiming mark at 10 yards.*

Object—Keeping elevation only

i Prove necessity.

ii Pin up an *auxiliary aiming mark*—section take aim —*check if faults occur*

iii Explain, elevation is kept by tip of *foresight* being in line with shoulders of U of *backsight* and the mark resting on the shoulders Show diagram. Remove *auxiliary aiming mark*, and let the section view the relation of the *sights* to the *stationary aiming mark*

iv. Section practice—aims being *taken* at visible *vertical* lines drawn on either side of the mark—not less *than* 1 *inch*, and *not more* than 2 *inches away*.

NOTE —*In order that the instructor can ascertain that any* aim to a flank is correctly maintained as regards elevation, he *will draw an invisible horizontal line through the lowest* visible part of the aiming mark.

v Pin up *auxiliary aiming mark*, to check aim, looking *chiefly for elevation. Give plenty of practice*

vi Explain table and various kinds of winds and how

2. The point of aim is indicated :—

i. By use of an *auxiliary aiming mark*. } As explained in Lesson 2.
ii. With reference to the breadth of target. } As explained in Lesson 2.
iii. By aiming off in degrees, using the *foresight*.

TABLE.

(Collective Fire.)

Range	Mild	Fresh	Strong
	°	°	°
0—700	0	[illegible]	[illegible]
800—1200	[illegible]	[illegible]	[illegible]

N.B.—The use of degrees does away entirely with all estimating in feet or yards. The fire unit leader has only to estimate (a) the range and (b) the strength of the wind, and then apply this Table.

INSTRUCTOR'S NOTES

Lesson 3.—Aiming off—collective.

Subject—

I.—This exercise should be carried out collectively at the *longer ranges*. It should be demonstrated that *the use of target breadths, auxiliary aiming marks or degrees* is better than the use of feet and yards. Use any suitable targets either natural or artificial. Aiming off in feet is mainly useful for target practice only, and not for field work.

Kit required.—Rifle rests. Man with flag.

50. *Aiming up or down.*

1. For alteration of sights or point of aim in ra... battle practices the recruit requires instruction... elevation table. ...

ELEVATION TABLE

Range.	Eleva tion	Vertical Rise		Ele va tion	Vertical Rise	
		In	How obtained		Ins	How obtained
200	300	6	2 × 3 = 6	400	12	Double amount obtained for 300
300	400	12	3 × 4 = 12	500	24	Double amount obtained for 400.
400	500	-	4 × 5 = 20	600	40	Double amount obtained for 500
400				5	30	4 × 5 and add ½ amount again, i.e., 4 × 5 plus ½ amount = 20 plus 10 = 30
		Vertical Drop			Vertical Drop	
500	400	In 20	How obtained 5 × 4 = 20	300	In 40	How obtained Double amount obtained for 400
400	200	12	4 × 3 = 12	200	24	Double amount obtained for 300
400	..	..		250	18	4 × 3, and add ½ amount again, i.e., 4 × 3 plus ½ amount = 12 plus 6 = 18.

NOTE.—Units—i.e., 2, 3, etc.—refer to the initial figures of hundreds of yards.

2 On the battlefield, better results will be obtained by correcting errors by alteration of sights than by aiming up or down—which is explained below, and which should only be used when time is the essential factor. (This will be rare since the alteration of sights only takes 3 seconds.)

3. If it is necessary to aim up or down the aim should be directed at a *point not more than 3 ft above or below* the 6 o'clock line.

INSTRUCTOR'S NOTES

Lesson 4.—Elevation table and aiming up or down.

Subjects.—

I Elevation.

The use of the table should be taught with Small and Large targets at actual distances, with the marking disc to show the supposed strike of the bullets.

II —Aiming up or down.

Object.—To avoid making minor alterations of *sights* when time does not permit

Limits —Three feet up or down.

Practice —At Small and Large targets.

Example —Firer observes the strike of bullet to be low or high, during a rapid or snapshooting practice. As time does not permit him to alter his sights he must aim up or down.

Kit required —Rifle and rests Tripods. Sandbags. . and Large targets. Auxiliary aiming mark. 1 man/ target (to work marking disc). 1 signalling flag.

iv. Section fire one round on command "Fire" (no time limit at first)

v Instructor, taking each individual in turn, checks with eye disc The men work on the command "FIRE"

vi Section is opened in two ranks, facing each other at 6 paces *Men of one rank check the aim of men opposite*, using eye discs if available; instructor occasionally checks with eye disc

II.—Later lessons.—Men in front with silhouette figure targets representing enemy

i 1st Practice Fixed bayonets
Target about 100 yards away
Long exposures (5 seconds)
Target appears at same place each time

ii 2nd Practice Fixed bayonets.
Targets longer distance up to 300 yards.
Shorter exposures
Targets appear in different places

Kit required —Aim correctors Silhouette targets for later lessons and 1 man per target 1 signal flag

52 *Aiming off for movement*

1. The following instructions for aiming at moving targets will be given *during* the latter part of preliminary training When practice in this form of shooting is carried out on 30 yards or miniature ranges, the pace of movement should be regulated in strict accordance with that of service targets.

2. When firing at targets crossing the front, the aim wi[illegible] first be taken on the object. Then, following the ob[illegible] sideways, the aim will be carried in advance and kept in front of the object until the rifle has been fired. The d

f x

to which the aim should be carried in advance of the target will vary according to the range, rate of movement, and *direction of movement.*

3. Up to 500 yards range, aim should be taken at the following distances in advance of the object :—

TABLE OF ALLOWANCES

Man walking	1 ft	For each 100 yards
Man doubling	2 ft	
Horseman trotting	3 ft	
Horseman galloping	4 ft	

For oblique movement, halve the allowance

4. Fire will rarely be effective at a single man moving across the front at more than 300 yards range, or at a single horseman above 500 yards. At ranges beyond 500 yards aim should be taken at the head of a body of troops moving to a flank

INSTRUCTOR'S NOTES

Lesson 6.—Aiming off for movement.

Preliminary.

1. Examine rifle and dummies—extend section—point out suitable target. Ground arms.

2. Instructor calls the section round him and explains the necessity for aiming off.

Subjects:—

I.—Demonstrate the following:—

i. Sights are first brought on mark.
ii. Aim the required amount in front of the object
iii. Automatic swing of rifle.

to which the aim should be carried in advance of the target will vary according to the range, rate of movement, and direction of movement

3. Up to 500 yards range, aim should be taken at the following distances in advance of the object:—

TABLE OF ALLOWANCES

Man walking	1 ft.	For each 100 yards
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For oblique movement, halve the allowance.

4. Fire will rarely be effective at a single man moving across the front at more than 300 yards range, or at a single horseman above 500 yards. At ranges beyond 500 yards aim should be taken at the head of a body of troops moving to a flank

INSTRUCTOR'S NOTES

Lesson 6.—Aiming off for movement.

Preliminary.

1. Examine rifle and dummies—extend section—point out suitable target. Ground arms.

2. Instructor calls the section round him and explains the necessity for aiming off.

Subjects:—

I.—Demonstrate the following —

i. *Sights* are first brought on mark.
ii. Aim the required amount in front of the object.
iii. Automatic swing of rifle

iv. *Trigger* pressed while rifle is on the swing, continue swing after pressing the *trigger*

Squad stand **behind** the instructor in order to be able to watch the movements of his rifle

II.—**Teach the movement table,** and the limits for fire by individuals

III.—i Section practise automatic swing of rifle, only taking first pressure

ii Instructor takes one man at a time, who views how to aim off by looking into the aim corrector

iii Having looked into the *aim corrector* the man returns to the section and continues to practise, completing second pressure

iv Instructor checks each man's progress in turn by means of an aim corrector

IV **Later lessons.**—Practice at actual distances up to 300 yards A man is employed to move about in front of the section, he should move obliquely as well as directly across the front

Kit required.—Aim corrector Man to act as moving target

53 *Aiming at ground and marking down an enemy*

1. The eyesight must be gradually trained in aiming at figures or other service targets and at ground which might conceal an enemy For this latter purpose a man will be directed to show himself for a few seconds at different ranges. The squad will then aim, from rests, at the ground which they believe to be occupied. After a short interval the man will stand up, whereupon errors will be corrected and [illegible] cized.

Firing Instruction.

54. *Object of firing instruction*

1. The object of all Firing Instruction is to teach men to handle their rifles correctly both in the open and behind cover.

55 *Trigger pressing*

Note—Taught in Care of Rifle (Recruit's Initial Lesson)

1. Before he is permitted to practise *trigger* pressing by himself, the recruit will be given several lessons in the correct way of pressing the *trigger* The rifle will be rested and the recruit will be seated with his elbows rested The instructor will, as a preliminary step, ensure that the recruit can move his trigger finger freely

2. The instructor will explain

i. That as the *trigger* has a double pressure, two distinct pressures are necessary to fire the rifle (The strength of the first is 3 to 4 lbs.; that of the second, about 2 lbs., making a total of 5 to 6 lbs.) The first should be taken when the rifle has been brought into the position for aiming; the second, when the sights are aligned on the mark.

ii. That the direction of the pressure is diagonally across the *small of the butt.*

iii. That the first joint of the forefinger should be placed round the *lower* part of the *trigger*.

iv That, in order not to disturb the aim, the breathing must be restrained when pressing the *trigger*.

3 In order that he may learn by experience the pressure required to release the *cocking-piece*, the soldier will also:—

i Be directed to place his forefinger under that of the instructor, but without exerting pressure, whilst the instructor carries out the motion

ii Then, to enable the instructor to ascertain whether the method is understood, the soldier will place his hand over that of the instructor, and exert the pressure

iii Finally, the soldier himself will aim and press the *trigger* while the instructor uses the *aim corrector* The main object is to release the *cocking piece* without disturbing the aim

4 The recruit will always say after the *spring* is released whether the true aim was maintained If not, he must state definitely the direction in which the rifle was pointing at the moment of discharge

5. From time to time the instructor will test the aim and trigger release of each recruit with an *aim corrector*, and, if necessary, further lessons in trigger pressing will be given. Practice with miniature ammunition should be given, to develop steadiness before practice is begun with ·303" ammunition

6. Trigger pressing requires most careful individual instruction, during which the necessity for determination and strong personal effort will be impressed on the mind of every recruit.

7. The use of the *sling* for steadying the rifle during f[illegible] is not to be taught.

Instructor's Notes.

Lesson 1.—Trigger Pressing.

Preliminary.

Explain its importance. Unless the *trigger* is properly pressed results in shooting will not be good.

Subjects—

I.—*Instructor demonstrates each phase. The recruit* practice

i. Test each recruit's trigger finger.

ii. Teach how to cock the *action*

iii Show correct grip with the right hand

iv How to apply forefinger to the *trigger*, first joint o the lowest part of the *trigger*

v. Teach how first pressure is taken

vi Explain and illustrate how second pressure is taken right hand kept still and breathing restrained

II.—*Section practice* —Each recruit in turn places his hand over that of the instructor.

Special Notes.

1. Rifle and elbows should be rested.

2. In the case of a backward recruit the instructor would place his hand over the recruit's to show the correct method of pressing the trigger.

3. Recruits should not use the left hand for this purpose

Kit required.—Any suitable rest.

56. *Loading, unloading, and charging magazines*

Note.—Taught in Care of Arms (Recruit's Initial Lesson).

Load—

i Turn the *safety catch* completely over to the front with the thumb of the right hand.

ii Pull out the *cut-off*, first pressing it downwards with the thumb

iii Seize the *knob* of the *bolt* with the forefinger and thumb of the right hand, turn it sharply upwards, and draw back the *bolt* to its full extent

iv Take a *charger* between the thumb and first two fingers of the right hand, and place it vertically in the *guides*

v Then, placing the ball of the thumb immediately in front of the *charger*, and hooking the forefinger under the *cut-off*, force the cartridges down with a firm and continuous pressure until the top cartridge has engaged in the *magazine*. *N.B.*—If there is no *cut off*, hook the finger under the woodwork

vi Force the *bolt* sharply home with the thumb and forefinger, turning the *knob* well down, and, with the forefinger of the right hand, turn the *safety catch* completely over to the rear, ensuring at the same time, by means of the remaining fingers, that the *bolt-lever* is fully down.

2. To Unload—

(a)—i As when loading, but after drawing back the *bolt* work the *bolt* rapidly backwards and forwa

—

(without turning the knob down) until the cartridges are removed from the *magazine* and *chamber*.

ii. Close the *breech*, press the *trigger*, close the *cut-off* by placing the right hand over the *bolt*, and apply the *safety catch*.

(b) Another Method.—Remove the *magazine* and take out the cartridges.

3. Charging Magazines.—The *magazine* will hold two chargers of five cartridges each, but should, in ordinary circumstances, be loaded with one only. If it is desired to charge the *magazine* without loading the rifle, the top cartridge may be pressed downwards with the thumb and the *cut-off* closed.

N.B.—When using a rifle which is not fitted with a *cut-off*, and it is required to "Charge Magazines," keep the pressure on the top cartridge with the thumb of the right hand and draw the *bolt head* over it with the little finger, close the *breech*, press the *trigger*, and apply the *safety-catch*.

57. *The standing position*

1. The standing position will, as a rule, be used to fire over high cover or to take a snap shot, during an advance, so that the pace is not materially checked. The shot will not be fired while actually on the move, but the firer will halt for a moment, shoot, and then continue the advance.

It is a convenient position for elementary instruction, but when recruits have acquired facility in handling the rifle, they will be practised normally in the lying and kneeling positions.

2 To Load—*

i. Turn half right.

ii. Carry the left foot to the left and slightly forward, so that the body is equally balanced on both feet

iii Bring the rifle to the right side with the *muzzle* pointing upwards, *small of the butt* just in front of the hip, grasping the *stock* with the left hand immediately in front of the *magazine*

iv Then load the rifle as already taught

3 **To adjust sights.**—This will be done as already taught *in lesson I* Aiming Instruction, and without any unnecessary movement

4. **To aim and fire—**

i. Direct the eyes on the mark

ii Then bring the rifle into the hollow of the right shoulder, press it in with the left hand, grasp the *small* firmly with the thumb and three fingers of the right hand, place the *forefinger round the* lower [illegible]
sure, [illegible]
unde [illegible]
and [illegible]

iii As the rifle touches the shoulder bring the cheek [illegible] keeping the face well back from [illegible] Close the left [illegible] h, restrain the [illegible] pressure (and [illegible]

---

* The command "Load" is only required for drill purposes
After a rifle is [illegible] the soldier is responsible that the magazine is kept filled until the command "UNLOAD" is given

iv. *After a pause bring the rifle to the loading position, and reload.*

Great care must be exercised to ensure that the forefinger is not placed on the trigger before the rifle is in contact with the shoulder, and that a firm grip is maintained with both hands while firing

5. *To unload* —As already taught Lower the *sights* and order arms.

INSTRUCTOR'S NOTES

Lesson 2.—Standing Position.

Preliminary.

1. For practising the firing positions the section will be formed in a straight line, and sufficient targets must be provided

2 The essential points of the firing positions are to be insisted upon from the beginning as the foundation of fire discipline The instructor's attention is called to the main points (*a*) to (*g*) in the first stage of fire discipline training

3 The **trigger release** of all rifles should always be in perfect order.

4. Rifles must fit the firers.

5. Individual instruction is necessary, squads to be small: the normal positions suit nearly all men

6. Any tendency to shoot from the left shoulder will be discouraged. A recruit with normal vision learning to use a rifle for the first time can be taught to fire from the right shoulder, for which the rifle is constructed, as easily as from the left.

PLATE 21.



STANDING—POSITION WHEN LOADING.

Points to Note —

1 Half turn to the right.
2 Body well balanced, legs separated.
3 Left elbow close to body, and wrist under rifle
4 Firm grip with left hand, close in front of *magazine*.
5 *Muzzle* pointing upwards.
6 *Butt* well forward
7 Fingers of right hand under the *cut-off* or woodwork
8 Eyes on the mark.

Reasons.

The left arm to be under rifle
Steadiness.
Support
4 Control.
5 Safety.
6. To come quickly in
8. Keep enemy in vie

Subjects.

1.—Standing position—

i. Examine rifle and dummies—extend section—instructor names his own target—point out suitable targets for section.

ii Explain that you are about to teach how to fire the rifle.

iii. Demonstrate the whole position, naming each phase whilst doing so —

(a) Loading

(b) *Sight setting—give range*

(c) Aiming and firing

(d) Unloading

iv Explain when the position is used—to prevent delaying the advance and for firing over high cover Give example

—Loading position—

i. Section imitates the instructor in coming to the loading position, and returning to the order—faults only to be checked as they occur.

ii. The section practice—instructor inspects each recruit separately. He should never touch a man, but should correct him by force of example.

iii. Call section round you, and explain a few reasons while the section rests.

iv. Send section back and give them further practice—check faults and question.

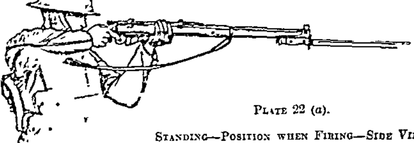


PLATE 22 (*a*).

STANDING—POSITION WHEN FIRING—SIDE VIEW.

Points to Note—

1 Body well *balanced*.
2 Left elbow well under rifle.
3 *Butt* pressed well into shoulder.
4 Firm grip with both hands
5 Right elbow slightly below right shoulder and well forward.
6 Eye well back from the *cocking-piece*
7 *Sights* perfectly upright

Reasons.

2. Support
3. Control
4 Control.
5 Good bed for the *butt*.
6 Clear view of *sights*.

PLATE 22 (*b*).



STANDING—POSITION WHEN FIRING—FRONT VIEW.

Points to Note:—

1. Body well balanced.
2. Left elbow well under rifle.
3. Good bed for the butt.
4. Firm grip with both hands
5. Eye well back from the *cocking-piece.*
6. *Sights* perfectly upright.

III.—**Loading, sight-setting, unloading**—

i. Make the section adopt the loading position
ii. Briefly explain how to load, adjust sights, and unload. The section imitates the instructor in all these movements
iii Give the section practice in loading and sight-setting, check any faults, examine *sights*, call out fresh adjustments (for practice), while moving along the section
iv Make the section unload and return to the order, check to see if *sights* are lowered and *safety-catch* is turned to the rear

IV **Aiming and firing**—

i Give command "**Standing, Load,**" and a sighting elevation (Rest)
ii Teach how to come to the aiming position, giving the essential points Section imitate the instructor—practice
iii Give reasons—further practice—check faults
iv Teach how to fire the rifle explaining —
  (a) *Trigger* only released when *sights* are correctly aligned
  (b) After slight pause return smartly to the loading position, and reload quickly
  (c) Declare point of aim, i.e., "Correct," "High" "Low" &c
  (d) Re-charge *magazine* after firing five rounds
v Section practice—check faults
vi Practice finished, give command "**Unload.**"

V.—**How to get the eye back from the cocking-piece** (essential for a clear view of the sights)—

i Raise the head a little and draw it back.
ii Raise the *butt* a little higher in the shoulder.

iii. Turn the body squarer to the target.

iv. If these methods fail, obtain a longer *butt.*

Kit required.—Any suitable targets or aiming marks

58. *The lying position*

1. The lying position will generally be adopted by troops on open ground, or when firing from continuous low cover, or from behind small rocks, trees, ant-heaps and similar cover.

2.—i. To lie down Turn half right and bring the rifle to the right side as when standing grasping the rifle in the left hand at the point of balance Place the right hand on the ground, and lie down The firer will thus be lying obliquely to the line of fire The legs should be separated, the left shoulder well forward, the left arm extended to the front and the rifle resting on the ground in a convenient position with its *muzzle* pointing to the target

(India —After turning half right and before lying down, advance the left foot as far as possible)

ii To load As when standing

iii To unload As when standing

iv To adjust *sights* Quit the rifle with the right hand, draw the rifle back with the left hand (without any unnecessary movement of the body) until the lines on the *backsight* can be clearly seen Then adjust the *sights,* as when standing, and resume the loading position

v. To aim and fire—proceed as when standing (without moving the elbows or body).

(India:—To get up from the lying position Draw up the left foot as close to the body and as far forward as possible (taking care not to raise the body), grasp the rifle with the left hand, place the right hand on the ground, press up and bring the right foot up to the left. (When about to advance carry the right foot to the front).)

PLATE 23



LYING—POSITION WHEN LOADING

Points to Note —

1. Body oblique to line of fire
2. Legs separated
3. Heels on the ground
4. Elbows closed slightly inwards
5. Rifle at full extent of left arm
6. *Butt* well forward
7. Rifle resting on the ground
8. *Muzzle* pointing to the front

Reasons.

1. To get left forearm under rifle.
2. Steadiness
3. Steadiness and safety
4. Prevent elbows moving when coming into aim.
5. Coming quickly and cleanly to aim
6. Coming quickly and cleanly to aim
7. Steady for loading
8. Safety

PLATE 21

ADJUSTMENT OF SIGHTS

Fig A



Points to Note —

1 Firer's body is not raised
2 Right hand is clear of rifle
3 *Slide* adjusted with left thumb

Fig. B



PLATE 25 (a)

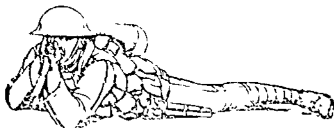


LYING—POSITION WHEN FIRING—SIDE VIEW.

Points to Note —

1. Both elbows on the ground.
2. Good bed for the *butt*.
3. Firm grip with both hands
4. Eye well back from the *cocking piece*

PLATE 25 (b)



LYING—POSITION WHEN FIRING—FRONT VIEW.

Points to Note —

1. Body oblique to line of fire.
2. Left elbow well under rifle.
3. *Sights* perfectly upright
4. Elbows closed slightly inwards

INSTRUCTOR'S NOTES.

Lesson 3.—Lying position.

Preliminary.

1. Recruits will be trained to adopt the lying position rapidly, and to perform the loading and aiming motions with as little movement as possible The oblique angle of the body is not to be exaggerated

2. To avoid tiring the men, the instructor, for purposes of brief explanation or demonstration, may give the order "REST," whereupon *safety catches* will be applied and the men will rest in an easy posture, the men will return to the loading position on the order "POSITION."

Subjects—

I.—**Sequence of instruction** will be the same as for the standing position

II —When in the aiming position the rifle may be raised or lowered on to the target by moving the body either backwards or forwards, pivoted on the elbows

(To be taught before the men actually fire in this position)

Kit required.—Any suitable targets or aiming marks, and ground sheets.

59. *The kneeling position.*

1. Kneeling is used mainly when firing from continuous cover, such as a low wall, bank, or in long grass, crops, etc which would obstruct the line of sight if the lying position was adopted.

2. To kneel.—*Loading position.*—Take a walking pace forward to the right front with the left foot, at the same



PLATE 26.

KNEELING—POSITION WHEN LOADING.

Points to Note:—

1 Body well balanced, left foot carried well to right front.
2. Body supported on right heel
3. Left forearm resting behind left knee
4. *Butt* resting on inside of right thigh, and well forward.
5. Left heel slightly behind left knee.

time grasping the rifle in the left hand as when standing, kneel down on the right knee: if possible sink the body on to the right heel, left forearm to rest behind the left knee, *butt* of the rifle resting on the right thigh.

3. *Firing position.*—The left knee will be in advance of the left heel, and the left elbow rested on or over the left knee; the left leg, hand and arm, and the right shoulder, should be in the same vertical plane as seen from the front

4. **To load.**—Adjust the *sights*, aim, fire, and unload as when standing.

INSTRUCTOR'S NOTES

Lesson 4.—Kneeling position.

Subjects·—

I.—*Sequence* as for the standing position.

.—When in the aiming position, the rifle may be raised or lowered on to the target by moving the knee, elbow, or body—all methods are permitted

(Taught before the men fire the rifle in this position)

SPECIAL NOTE.

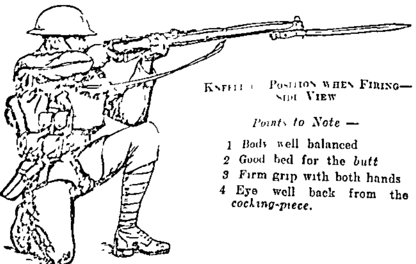
Loading, sight-setting and unloading need not be taught in detail in this lesson. Words of command only are necessary.

Kit required.—As for the lying position.

60. *The sitting position*

1. The sitting position is suitable when on a steep slope The right shoulder should be kept well back, and the left forearm supported by the thigh; the right elbow may rest against the right knee, or be unsupported

PLATE 27 (a)



KNEELING POSITION WHEN FIRING—SIDE VIEW

Points to Note —

1 Body well balanced
2 Good bed for the *butt*
3 Firm grip with both hands
4 Eye well back from the *cocking-piece.*

PLATE 27 (b).



KNEELING—POSITION WHEN FIRING—FRONT VIEW.

Points to Note:—

1. Body well balanced
2. *Sights* perfectly upright.
3. Left leg, forearm, rifle and right shoulder in one
4. Left elbow resting in rear or over the knee cap. vertical plane.

PLATE 28



SITTING—POSITION WHEN LOADING.

Points to Note—

1. Body upright and oblique to line of fire.
2. Left elbow resting on thigh.
3. *Butt* resting inside right thigh.
4. Both feet in most convenient position, accordi the slope of the ground.

PLATE 29



SITTING—POSITION WHEN FIRING—ACROSS A VALLEY.

Points to Note:—

1. Good bed for the *butt*.
2. Both elbows rested when possible

PLATE 30



SITTING—POSITION WHEN FIRING—DOWN A STEEP SLOPE.

Points to Note:—

1. Sights perfectly upright
2. Good bed for the butt.
3. Left forearm [illegible]ing along left thigh
4. Right elbow [illegible] according to slope

INSTRUCTOR'S NOTES

Lesson 5.—Sitting Position.

None are necessary, as the plates explain themselves The exercise must, however, be carried out on ground suitable for this position

Kit required.—As for the lying position

61. *Handling the rifle behind cover.*

1. Besides teaching the firing positions already described, the instructor will explain to his section the best means of using various forms of cover for fire effect and protection, practising the men in adapting themselves to various forms of cover in all positions (*See* Infantry Training, Vol II, (1921, Sec 9, para 5))

2. The value of cover from view and the means of concealment afforded by small folds in the ground or even a few tufts of grass will be demonstrated. The tendency to attract attention by exaggerated movements of the head, arms or rifle, in loading and aiming, will be pointed out and checked.

3. Plates 31 to 39 show the main points to fulfil in using cover of various kinds.

Note—The normal positions for loading are as in the plates In the event, however, of more than 5 rounds being named in a fire order, the *magazine* will be recharged with the rifle still maintained on top of the cover.

PLATE 31



STANDING IN A TRENCH—POSITION WHEN LOADING.

Points to Note:—

1 Firer, rifle and bayonet under cover.
2 Left foot on fire-step when possible.
3. Rifle rested on the ground.
4 Muzzle clear of cover.

INSTRUCTOR'S NOTES

Lesson 5.—Sitting Position.

None are necessary, as the plates explain themselves. The exercise must, however, be carried out on ground suitable for this position.

Kit required.—As for the lying position.

61. *Handling the rifle behind cover.*

1. Besides teaching the firing positions already described, the instructor will explain to his section the best means of using various forms of cover for fire effect and protection, practising the men in adapting themselves to various forms of cover in all positions. (*See* Infantry Training, Vol. II, (1921, Sec. 9, para. 5).)

2. The value of cover from view and the means of concealment afforded by small folds in the ground or even a few tufts of grass will be demonstrated. The tendency to attract attention by exaggerated movements of the head, arms or rifle, in loading and aiming, will be pointed out and checked.

3. Plates 31 to 39 show the main points to fulfil in using cover of various kinds.

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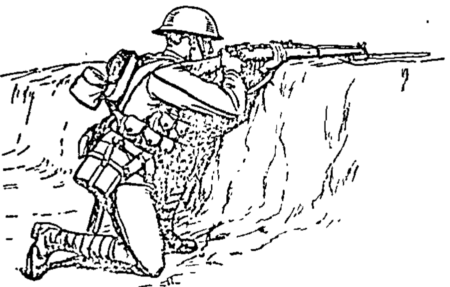
PLATE 36.



KNEELING BEHIND COVER--POSITION OF READINESS.

Points to Note —

1. No undue exposure
2. Rifle and bayonet under cover.
3. Rifle resting on the ground
4. *Muzzle* clear of cover
5. Left hand near *nose-cap*.
6. Right hand grasping *small of butt*.
7. *Sling* to the right.



KNEELING BEHIND COVER—POSITION WHEN FIRING.

Points to Note:—

1. No undue exposure
2. Rifle, but not hand, resting on cover
3. Left elbow resting on left thigh

PLATE 38 (*a*)

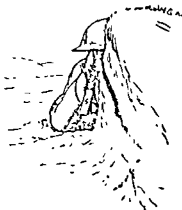


LYING—FIRING ROUND COVER—POSITION WHEN FIRING—SIDE VIEW

Points to Note —

1 No undue exposure 2 *Backsight* clear of cover.

PLATE 38 (*b*)



LYING FIRING ROUND COVER—POSITION WHEN FIRING—FRONT VIEW.

Points to Note:—

1 No undue ex
2 Side of rifle ... against cover.
3 Sights perfect

PLATE 39 (a).

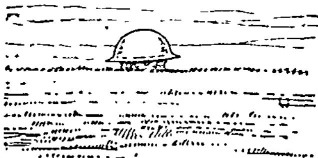


LYING BEHIND COVER—SMALL FOLD IN GROUND—SIDE VIEW

Points to Note —

1. No undue exposure
2. Muzzle of rifle clears cover in front.

PLATE 39 (b)



LYING BEHIND COVER—SMALL FOLD IN GROUND—FRONT VIEW.

Points to Note.—

1. No undue exposure.
2. Muzzle of rifle clear of cover.

INSTRUCTORS' NOTES.

Lesson 6.—Positions behind cover.

Preliminary.

1. When engaged with the enemy, every man will be in a position of readiness; if not engaged, a look-out or sentry will keep watch

2 Eyes must be kept on the target between shots, but it is permissible to glance down to insert a fresh *charger*.

3 All positions must be taught, correct uses of cover explained, each kind of cover which is used will be discussed—walls, trenches shell holes, isolated cover, folds in the ground, cover from view will be demonstrated

4 When handling the rifle behind cover, the position to be adopted will not be named The man adapts his position and action to the type of cover behind which he is sheltering

5 Men must adapt themselves to cover according to their build *Any two men will rarely take up exactly the same position.*

6 Points to bring out —
(a) Modification of position to suit the cover, **without sacrificing fire effect.**
(b) Rifle properly rested
(c) No undue movement or over-exposure

7. Good cover should —
(a) Have a good field of fire.
(b) Permit free use of the rifle
(c) Be bullet-proof, "Cover from view only" excepted
(d) Be inconspicuous
(e) Be easy to advance from

Subjects—

I.—i. Examine rifles and dummies Bayonets to be fixed.

ii. Instructor demonstrates correct methods for slow, snapshooting, and rapid fire Section watch from the right flank Instructor then teaches methods in detail

II.—Teach the method of loading and adjustment of sights (no standardized position)

i. Men and bayonet below cover

ii. As close to cover as possible

III.—Show position of readiness.

i *Safety catch* forward

ii Take up a position which enables the rifle to be brought quickly to the aim, *magazine* to the right (*see* Plate 36)

iii. Give the section practice, and check faults

IV.—Teach how to aim and fire.

i. The rifle, but not the hand, rested near the point of balance on or against the cover.

ii. No undue exposure

iii. No unnecessary movements.

iv. Give practice, check faults.

V.—Teach Snapshooting—Demonstrate from the position of readiness, explaining the following points:—

i. Keep the head still.

ii. Reload with *butt* in the shoulder.

iii. If no more enemy appear, return to the position of readiness.

iv After firing five rounds return under cover and re-charge *magazine;* then adopt the position of readiness

v. Give practice, check faults.

VI—**Teach rapid fire**—Demonstrate from the position of readiness —

i Right elbow kept down when working the *bolt.*

ii. Give practice, check faults

Special Notes.

1 **Kneeling behind cover.**—Sequence as for standing.

(a) Kneel on either or both knees

(b) *Magazine* turned to right in loading position.

(c) Knee close to cover in aiming position

(d) Give practice, and check faults

2 **Firing round cover.**

(a) Side of rifle rested *Backsight* clear of rear ed[illegible] of cover

(b) Fire round right side

(c) No unnecessary exposure

(d) Give practice, and check faults

3 **Isolated cover.**—Dangerous to use if comp[illegible]

(a) Demonstrate correct position

(b) Instructor calls section round hi[illegible] correct position, i e, lie straight [illegible] with legs closed

(c) No unnecessary movement when [illegible] ing sights

(d) Side of rifle rested, *backsight* not touching the rear edge of the cover

Note.—At the end of this lesson the section view the complete demonstration from the front

Kit Required—Rifles, dummy cartridges and suitable cover—artificial or natural

62 *Automatic alignment*

1. Automatic alignment is the natural action of a man trained in the use of the rifle whereby he automatically brings his weapon into an approximate alignment on to the target Constant practice is essential for this to be done correctly Muscle exercise No 1 will be found useful in this respect

2 Snapshooting trains the combination between hand and eye, training in automatic alignment trains the hand to work in combination with the eye and the ear

3. **Night firing.**—Men should be exercised in the following automatic method of aligning their rifles for night firing:—

i. Aiming marks should be selected within 100 yards of the section.

ii. The men should be ordered to bring their rifles into the firing position with both eyes shut

iii. The right eye should then be opened, and the approximate alignment of the rifle verified

After some practice each man will be able to ascertain his individual error, whether vertical or lateral. He should correct this by practice until he is able, with his eyes shut, to align the rifle with approximate accuracy.

4. Practice should also be given in aligning the rifle at sounds, such as the opening and closing of a rifle bolt by a

man hidden behind a bush, the rattling of tins on a wire, and so on.

This exercise should first be practised in the daytime. When proficiency is attained, men should be exercised in firing a few rounds after dark (or in daylight using smoked glasses) at large screens at a range not exceeding 300 yards, in order to demonstrate the value of the instruction received The position of the screen should be indicated by some rough expedient to represent the flash of a rifle, or by a noise being made close to the target by a man in a pit

5 Much material effect cannot be expected, save possibly against an enemy in movement, but the moral effect should be considerable

Troops in a position commanding open ground or an approach which may be used by the enemy, may arrange to sweep it with fire by various means These comprise—Laying rifles and light automatics in rests constructed by daylight, preparing illuminated aiming marks giving a horizontal line of sight, or by firing at the flashes of the enemy's rifles

Instructors' Notes

Lesson 7.—Automatic Alignment.

Subjects—

I *1st stage*—At the halt at targets within 50 yards:—

(a) By looking at the target then closing the eyes and trying to align the rifle on the target

(b) By endeavouring to locate a hidden target by sound and then trying to align the rifle on the target

II. *2nd stage.*—At hidden targets in various places, the section being on the move

III. *3rd stage.*—With ball ammunition at night on targets up to 300 yards (at the halt)

(Smoked glasses will enable the 3rd stage to be carried *out in daylight.*)

63. *Muscle exercises*

1. To accustom the muscles to the strain of prolonged firing, the following exercises will be carried out frequently during the elementary training of recruits and also by trained soldiers. Care must be taken that men are not unduly fatigued.

2. *In each practice a conspicuous object representing* the target, will be indicated, and the rifle will invariably be thrown into approximate alignment with it. In the first, third and fourth exercises the correct aiming position will be adopted (including taking the first pressure, bringing the cheek to the *butt*, and closing the left eye), but without actually aligning the *sights*. In the second exercise the first pressure will be taken when the right hand grasps the rifle, but the head will not be lowered, the left eye will not be closed, nor will the *sights* be aligned.

3. These exercises are designed to strengthen the muscles of the forearm and the biceps and to work men up to a high standard of efficiency during prolonged or rapid fire without undue fatigue.

4. *Dummy cartridges will not be used.*

5. Bayonets will be fixed except in 2nd Practice.

1st Practice.

Caution *Muscle exercise 1st Practice.*

"Load"—(any position).

"One"—Bring the rifle to the position for aiming, return after a short pause to the position for loading, and continue the practice.

"Unload."

2nd Practice.

Caution *Muscle exercise 2nd Practice.*

"Load" (any position)

"One."—Bring the rifle to the position for aiming.

"Two"—Quit the rifle with the right hand.

"Three"—Seize the rifle with the right hand, and at the same time quit it with the left hand.

Note—The words "Two" and "Three" will be given at intervals of about 10 seconds

"Unload."

3rd Practice.

Caution *Muscle exercise 3rd Practice.*

"Load" (any position).

"One"—Bring the rifle to the position for aiming.

Note—The men will be trained progressively to hold the rifle in this position until they can do so without fatigue for two minutes

"Unload"

4th Practice

Caution *Muscle exercise. 4th Practice.*

"Standing—Load"

"On guard"—Come "on guard," with either foot forward *Safety catch* back.

"Aim."—Advance the rear foot, push forward the *safety catch*, align the *sights* and take the first pressure.

Note.—The words "on guard" and "Aim" will be repeated at intervals of four seconds

"Unload"

64 *Quickening exercises*

1. The following are examples of quickening exercises —
   A With ammunition
   B Without ammunition

2. These exercises are useful for smartening recruits when they have reached a fair standard of knowledge, and, secondly, for quickening the trained soldier Many other exercises of a similar nature can be devised by instructors

A With Ammunition

(To be carried out with ammunition on 30 yards or miniature ranges, in all positions, with or without using cover)

3 *Speed and accuracy*—
   Competition between 2 firers or between 2 pairs of firers
   Targets.—Any small targets (*e g* , tiles, old tins, &c) that will fall or break when struck.
   Method of conducting.—Firers standing at ease, rifles unloaded; on the word "Go" they load, adjust *sights* and fire.

The first firer, or pair of firers, who knock down all their targets win.

4. *Fire and movement*—
   Competition between any number of firers, who for safety will fire singly.
   Targets as in No. 1, number as required.

Method of conducting —Firer standing at ease, rifle unloaded, on the word "Go" he lies down, *loads*, adjusts *sights* and fires 2 rounds; he jumps into a trench and fires 2 rounds; and then over the top and fires 2 rounds kneeling in the open

Time limit.—One minute, or less, according to proficiency The winner is the man who gets most targets down.

B —Without Ammunition

(If ranges and ammunition are not available the following exercises are suitable)

6. *Quick handling and firing* —Section in two ranks 6 paces distant, front rank with aiming discs (lying, kneeling or standing as required), rear rank turned about, their rifles on the ground with *bolts* and *magazines out*. *Magazine platforms* removed, *safety catches* applied, *sights* set at 1,000, *cocking piece* in wrong groove, bayonets off, 5 dummy cartridges loose, and empty *charger*, lying near rifle.

On the words "400—Go," each firer reassembles all parts of the rifle, fixes bayonet, loads with dummy cartridges, adjusts his *sights*, and (in a position similar to that adopted by his front rank man) fires 5 rounds at the eye disc

The winner is the firer who gets the most accurate shots in the shortest time, including recharging his *magazine*. Front and rear ranks will then change over.

Note.—The instructor must watch the firers very closely.

(India—Dummy cartridges will NOT be used where aim is being taken at an aiming disc held to the eye)

7. *Rapid loading competition.*—Dummy cartridges placed on the ground in *chargers* (number unlimited) 50 yards in front of the men.

On the word "Go" they double to their ammunition, and carry out loading and unloading as rapidly as possible in the lying position The rifle must be held in the correct loading position

Time limit —One minute

One half section to check the action of the other half, then change over

The best man in each section can similarly compete to decide who is the best in the platoon or party

8. *Loader versus filler* —The section will be divided into pairs. One man of each pair takes up a loading position is given 5 *chargers* of dummy cartridges As fast as loads and unloads his rifle the filler picks up the cartridges, replaces them in *chargers* and supplies the loader with ammunition

If the loader can call, "I am waiting," before he has loaded and unloaded 12 *chargers* he wins

If, however, the filler can keep the loader supplied until the latter has loaded and unloaded 12 *chargers*, the filler wins.

The men of each pair then change over.

65. *Rapid fire training.*

To be carried out in all positions with bayonets fixed, either as a separate exercise or, when men are sufficiently advanced, during firing instruction.

Each practice will be demonstrated by the instructor.

Practice I—Clean and Quick loading.

Command	Points to note and criticise.
"**Load**" *or* "**Standing**" ("Kneeling") "**Load.**"	*All movements carried out correctly and smartly.* *Magazine* charged in one clean motion *Pouch* rebuttoned. ***Safety catch*** applied Firm grip with both hands. Eyes on target (but it is permissible to glance down to insert *charger*)
(Safety catches forward.)	
"**Re-load**" Repeat 4 times at intervals of one second.	Instant opening and closing of *breech* in one movement *Bolt* withdrawn to full extent each time
"**Load**" with another *charger* and repeat	Correct grip with right hand as soon as *breech* is closed
"**Rest**" or "**Order Arms.**"	*Safety catches* applied

Practice II—Reloading at shoulder and first pressure.

Command	Points to note and criticise.
"**Load**" .	As in Practice I.
"**Aim**" . .	*Safety catches* forward First pressure taken
"**Re load**" As in Practice I, but given at intervals of 2 secs	Rifle kept in shoulder First pressure only taken Firm grip Correct position of *butt* in shoulder Cheek on *butt*, and head kept as still as possible.

2 The methods of carrying out fire discipline training laid down in this section should ensure that men obey orders rapidly and accurately, and, when left to themselves, use their rifles to the best tactical advantage

3 Preliminary collective exercises consist of simple practices to teach accurate and quick obedience to fire orders, quick concentration of fire on various targets, while at the same time strict attention is paid to the individual action of the soldier in "Fire Discipline"

4 The normal firing position is *lying* this will always be used unless other orders are given The instructor will always make certain that the aiming mark he describes is visible to every member of his section

5 Standing, kneeling and sitting positions will only be practised under conditions when they would be used, in wet weather, however, the standing position may be used

6 Rapid fire should never be ordered or allowed unless the target justifies its use

7 A supposed position of the enemy will always be pointed out The position of the instructor must be that of the fire unit leader in the battle (except in the first stage "At the Halt") until he has completed his fire orders; he will then move about to check faults

8 Fire discipline training is carried out in two stages.

1st or elementary stage.

9 This stage is purely drill As tactical situations, and hence the use of ground and cover, are not considered, it can be carried out in barracks, it is first carried out AT THE HALT and then ON THE MOVE

10 **At the halt** (with dummy cartridges) Easy servi aiming marks will be used, and the ranges given must be

iii Fire orders are given (particular attention being paid to correct pauses so that each part of the order may be acted on before the next is begun)

The instructor will walk round his section, paying attention to the points previously mentioned

2nd or more advanced stage (dummy cartridges will not be used)

13 This stage will be carried out in open country, on any suitable piece of ground having small undulations and minor irregular features, and is designed to teach and practise the men in the following —

i The duties already practised in the 1st stage.

ii The use of ground and cover in relation to movement and how to obtain fire effect.

iii. Initiative and judgment.

14 The exercise is carried out as follows —

i The section advances, extended

ii A man appears (for about half a minute)

iii Instructor orders, "At the man—Fire."

iv The section halts, each man adopts the position he thinks suitable, according to the nature of the actual patch of ground over which he is moving; (he may find that he cannot see the target while he is lying down but that if he kneels he can do so or by moving forward or back a yard or two he can get a better position), adjusts his sights, and fires

15 The instructor will act as laid down in para

Tests of Elementary Training.

67. *General.*

1 These tests are most important, and if a platoon commander can satisfy himself that his men are able to pass all the tests, he can rest assured that so far as the groundwork of rifle training is concerned, he has an efficient platoon.

2. The platoon commander will keep a record of all the men in his platoon, showing the tests which they have passed, and the dates on which the tests were carried out.

3 This record will be inspected periodically by the company commander. Extracts from these records will furnish useful guides as to efficiency when men are transferred to other companies. Soldiers and recruits will themselves keep a record of their performances in their scoring books.

4 It is important that teaching should not be confused with testing. In the former a man is instructed by demonstration and explanation, in the latter he is questioned or ordered to carry out a certain exercise without any explanation or assistance, and either passes the qualifying standard or is relegated for further instruction.

5 Range practices and more advanced training will be a waste of ammunition and time, unless recruits have been thoroughly grounded, and trained men are kept efficient in elementary training. The following system of tests has therefore been designed in order to —

i Provide a means of testing recruits in order to ensure that they have reached an efficient standard before they begin range practices.

B.—Inspection Tests

1 **Firing positions.**—Men should be inspected in all firing positions, both in the open and behind cover, and those who make any serious faults will be failed.

2 **Fire discipline.**—The rapid execution of all orders, including the correct carrying out of all detail as laid down in "Fire Discipline Training," Second Stage A B and C, Sec 66, 18

An efficient standard must be reached in the above

69 *Method of conducting the standard tests*

1 **Recognition of targets and aiming points.**—The men being tested should each have an aiming rest The commander will describe some difficult aiming point The men lay their rifles on the point which they recognise from the description. Four points should be described for every man tested

Standard three out of four points described must be recognised

2. **Judging distance**—As for Quarterly Test, *see* Section 28

3 **Adjustment of sights.**—Four distances will be named and sights examined The position of the individual being tested will be varied, i.e., standing, kneeling and lying.

Variations between distances ordered will not exceed 400 yards.

Standard: three correct adjustments out of four. Each within 3 seconds, time to be taken from the last sound of the range given to the moment when the *slide* is fixed.

The instructor will stop the watch when the *trigger* is pressed

Standard three out of four aims to be correct, each within four seconds

(*India —Dummy cartridges will NOT be used when aim is being taken at an aiming disc held to the instructor's eye*)

9 **Rapidity of loading.**—The men to be tested will be equipped with a bandolier or pouches, and six *chargers* filled with dummy cartridges

The *chargers* will be placed in the pouches or bandolier, which will be buttoned over them

The time required to load close the *bolt*, and eject the cartridges will be noted The following conditions must be fulfilled —

> The rifle held in the correct loading position, one *charger* inserted at a time, the pouch or bandolier whether empty or not, buttoned up every time a *charger* is withdrawn

Standard time one minute

10 **Rapidity of firing.**—This test will be a combination of 8 and 9 On the command "Rapid—Fire," each man will load with one *charger* at a time from the pouch or bandolier (the pouch being buttoned up each time a *charger* is withdrawn), and fire 10 rounds at an aiming disc held to the eye

Standard time one minute from the moment the command "Rapid—Fire" is given, eight shots out of ten to be correct.

(*India —Dummy cartridges will NOT be used when aim is being taken at an aiming disc held to an instructor's eye*)

No. 2. *Kit required.*—Dummy No 36 Grenades. Respirators.

Time	Subject	Detail
Mins		
15	Firing Instruction .	Loading and Firing, *all* positions, in Respirators
10	Care of Arms	Trained Men's mechanism
15	Quickening Exercise	Loaders v Fillers Competitive (With dummies)
10	Bombing . .	Points before and after Throwing or Firing Live Grenades
10	Quickening Exercise .	Quick handling and firing (With dummies)

No. 3. *Kit required.*—No. 37 W. P. Dummy Grenades. Landscape Targets

Time.	Subject.	Detail
Mins.		
10	Firing Instruction	Automatic Alignment. Elementary Stage (No 1)
10	Aiming	Questions on Wind, Elevation and Movement Tables
15	Quickening Exercise	Rapid Loading Competitive. (With dummies)
10	Bombing	Description and Handling No. 37 W. P. Grenades
5	Firing Instruction	Muscle Exercise No 3
10	Visual Training	Recognition on Landscape Targets.

No. 5. *Kit required* —" Small " and " Large " Miniature Targets Discharger Dummy No 36 Grenades Landscape Target Training Sticks Aiming Rests

Time	Subject	Detail
Mins		
15	Fire Discipline Training	1st stage — (a) At halt (b) On move
10	Aiming Instruction	Lesson 2 Questions on Wind Table Practice in aiming off and keeping elevation
15	*Bombing Instruction*	*Changing from Rifleman to Rifle Bomber*
10	Visual Training	Recognition on Landscape Target
10	Bayonet Training	Lesson [illegible] Parries

No. 6. *Kit required* —Eye disc. Training Sticks

Time	Subject	Detail
Mins		
15	Firing Instruction	Rapid fire training Practice I, II and III
10	Section Battle Formations	Arrow head — line — file — single file. Extensions at halt and on move
10	Aiming Instruction	Questions on Wind, Distance and movement tables
10	Bayonet Instruction	Lesson 4 Practice long and short points at training stick.
10	Care of Arms	[illegible]
5	Bombing Instruction	[illegible]

No. 9. *Kit required*—Silhouette Targets put out. Discharger and Dummy Grenades

Time	Subject	Detail
Mins		
15	Fire Discipline Training	Stage 2. In the open
15	Visual Training	Stage 2. Silhouettes
10	Quickening Exercise	Rapid Loading competition
20	Bombing	Changing from Rifleman to Rifle Bomber and throwing dummy grenades from a fire position.

No. 10. *Kit required*—Bayonet sacks. Silhouette Figs. 3, 4 and 5. Dummy Grenades.

Time	Subject	Detail
Mins		
15	Bayonet Training	Lesson 4. Long point and short point at sacks
10	Aiming Instruction	Snapshooting. Silhouettes, Nos. 3, 4 and 5. 100—300 yards. Exposure 4 secs
15	Bombing	Loosening Exercise. Throwing into cages
10	Visual Training	Examination of ground. Description of Lines and Areas
10	Quickening Exercise	Rapid loading competitions (With dummies.)

on the classification range, and are supplied reduced to the correct scale

5 The difficulties of service shooting can only be partly reproduced, *e g*, difficulty of estimating range, effect of [illegible]

[illegible]

7 For Details of the **Empire Miniature Range Test**, see Table A, Appendix I, Vol II

The Home Tables are not published in the Indian edition of Small Arms Training

73. *Rifles and Ammunition*

1 **Rifles.**—The rifles used should be service pattern, ·22-inch R F The correct sighting for direct hits is about 300 yards, but each rifle on charge should be periodically tested by a good shot, and a board kept in the range showing the exact elevation and deflection required on each rifle for direct shooting on that particular range. (*See* Sec. 76, 3 and 7) Before firing commences, the instructor will see that each rifle has its own correct sighting elevation and deflection

2 The *windgauge* may be used to represent wind, and the firers taught to aim off so as to correct the deflection given, acting sometimes on their own judgment, sometimes according to orders for fire direction.

3 **Cleaning.**—Rifles should be cleaned after firing 60 rounds, and always before firing "rapid," and on conclusion of firing should be wiped out rag clean and left slightly oiled.

4 **Ammunition.**—Only ·22-inch miniature ammunition will be used on a miniature range

2 **Crossing targets** are useful for practising movement of the rifle.

3. An instructor will supervise and instruct each firer.

4 Marking should be carried out from the firing point by means of field glasses

5. **Individual battle practices.**- Individual battle practices can be fired, using figures representing men up to 600.

6 **Collective battle practices.**—The necessity for collective fire can be shown, and many useful battle practices carried out, on paper or turf bank landscape targets.

With the aid of these targets, instruction may be given in the description of ill-defined service objects, such as areas of ground, probable enemy positions, etc

76. *Paper landscape targets.*

1. *Paper landscape targets* —The frame for landscape targets is 10 feet long and 5 feet high Landscape pictures in sheets, 5 feet by 2 feet are pasted on to the lower portion, leaving 3 feet of blank sky-screen above to receive the shots

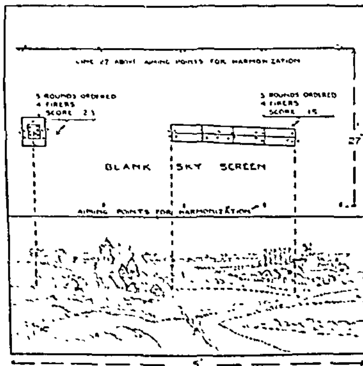
The sky-screen should be of brown paper in order to render the bullet holes invisible to the firers

2. When firing at paper landscape targets, rifles should be given extra elevation so that the bullets will strike the blank sky-screen, even if the aim is taken at an object at the bottom of the landscape; this necessitates the rifles being harmonised so that they will all shoot to the same height above the point aimed at as follows:—

Pin or paint aiming marks, at intervals of about 12 in. on a horizontal line at the bottom of the blank sky-screen. (*See* Plate 40)

To face page 188

PLATE 40.



LANDSCAPE TARGET COMPETITION.

6 All shots in the rectangle opposite the particular firer (up to the number of rounds given in the fire-order) count 1 point each to the total score of the section which is firing; any shots in any rectangle over and above the number ordered will not count.

Time limits should be imposed in these competitions.

7 A board should be hung in every miniature range showing the elevation required for each rifle as follows:—

25 YARDS MINIATURE RANGE.

No. of Rifle.	Elevation for Direct Hits	Deflection	Elevation for Paper landscape Targets
1	300	Central .	1,450
2	300	½ division right .	1,400
3	350	1 ,, left .	1,200
4	250	Central . .	1,250

77. 50 yards ranges.

[illegible] 50 yards ranges have the following advantages over iture ranges:—

i The man uses his own service rifle.

ii He learns to shoot with it under easy conditions.

(c) Approved revolver targets at the bottom of the sand bullet catcher

(d) Landscape targets or L. A. instructional targets will be placed on the steps at the end of the ricochet pit so that the sky-screen comes opposite the sand bullet catcher and the picture directly *below* the bullet catcher.

vi. *The following types of target are not allowed on the 30 yards range* -

(a) Steel plates

(b) Any moving target other than in the trench provided for this purpose

(c) A-A targets

Firing revolver.—Practices involving the advance of r the firer or of the target will not be carried out on a rds range

ese practices must be carried out on a classification e or on a specially constructed revolver range.

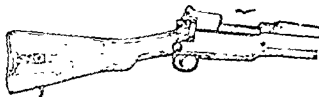
In conjunction with Bayonet Assault Course.—Bayonet lt courses should be built where possible, behind the t point of 30 yards ranges, extending from 80 to 100 s in depth

Construction and scale of apparatus.—Details of contion target apparatus and list of targets to be maind for both miniature and 30 yards ranges are given ol III

THE SNIPER RIFLE.

(Pattern 1914. 303-inch magazine rifle fitted with 1918 model telescopic sight.)

PLATE 41



RIFLE, MAGAZINE, 303.

78. *Description.*

1. The rifle is constructed on the *bolt* system, the *breech* being closed by a *bolt* worked by a *lever* on the right side.

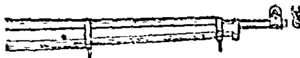
2. The *body* is screwed on to the *barrel*. At its front end it forms a *hood* (27), in which are the *recesses* in which the *locking lugs* lie when the *breech* is closed. A *gas escape hole* is provided on the *right*.

3. The head of the *trigger* is so shaped as to form *two points* (42, 43), which, as the *trigger* is pressed back, *bear*

in turn against the under surface of the *body*, thus giving the double pressure

4. The *bolt stop* has at its front end a *thumb-piece* (49), and on its inner side a *block* (50), which projects into the *body* and against which the rear face of the *split lug* comes when the *bolt* is drawn back. It is pivoted in the *bracket* on the left of the *body*, and on its outer side is a flat *spring* which keeps the *block* forced inwards.

PLATE 41.

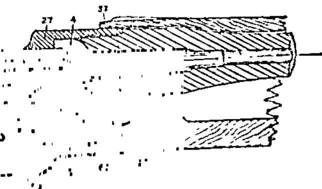


INCH, ENFIELD PATTERN 1914.

5. The *bolt stop* contains the *ejector*, which is flat, with a projection (51) which enters the body through the *long slit*. When the *bolt* is drawn back this projection passes through the slot in the *split lug*, so that the base of the cartridge is drawn against it, with the result that the case is thrown out to the right. The *ejector* is pivoted on the same screw as the *bolt stop*.

6. The *magazine* holds five cartridges.

PLATE 42.



...INCH, PATTERN 1914

PLATE 43

EXTRACTOR

26 25 24 23 23

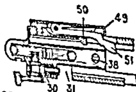
T. 13 8 6 2 9 7 5 3

6 4 3 1

7 5 3 10 4

SIGHT LEAF





HORIZONTAL SECTION OF BODY SHEWING EJECTOR, SAFETY CATCH, ETC.

7. On the upper surface of the *magazine platform* is a *rib* which ensures that the cartridges arrange themselves properly on being forced into the *magazine* Moreover, when the *magazine* is empty, the rear end of the *rib* prevents the *bolt* being closed, thus *indicating that it is necessary* to recharge the *magazine*

N B —For drill purposes, to allow manipulation of the bolt to be practised without dummy cartridges, a *platform* depressor is provided To insert this, place it edgeways right side down on the *magazine platform*, press down and allow it to turn over so as to engage under the *body*, thus keeping the *magazine platform* depressed and allowing the bolt to pass freely over it To remove the *depressor* from the *magazine*, press it downwards and, the thumb nail being inserted in the slot, pull the left side upwards until the *depressor* turns on its edge and can be removed

79. *Action of the Mechanism*

1 Suppose that a cartridge had just been fired. On raising the *bolt lever*, the *bolt* is rotated to the left. The *cocking-piece*, being held by the *slot* in the lower part of the *boltway* in the *body*, cannot rotate with the *bolt*. The *tooth* (19) on its front end is thus forced by the action of the *sloping surfaces* to leave the *long groove* (9) in the end of the *bolt* and enter the *short groove* (10), thus partially compressing the *mainspring* and slightly withdrawing the *striker* As soon as the *locking lugs* (3, 4) are clear of their recesses and the *bolt lever* has left the recess on the right of the *body*, the *sloping surface* (11) on the *bolt lever* meets the *sloping shoulder* (35) under the *sight bed*. This results in the slight withdrawal of the *bolt* and consequently begins to withdraw the case from the *chamber*, effecting prim

pushed forward in front of the *bolt*. As it moves forward the cartridge springs up and its rim places itself under the *claw* (23) of the extractor. It is thus pushed forward into the *chamber*.

5. During the early part of the forward travel of the *bolt* the *ejector* is pushed outwards by the side of the *bolt*. Eventually the *bent* (20) of the *cocking-piece* meets the *nose* (40) of the *sear*. The *striker*, which is attached to the *cocking-piece*, is thus held stationary, while the *bolt* moves on over it. This forward movement compresses the *mainspring*.

6. When the rotation of the *bolt* by means of the *lever* begins, the *locking lugs* work on the *sloping surfaces* leading into their *recesses*, and carry the *bolt* still further forward, completing the compression of the *mainspring*. During the rotation, the *cocking-piece* is prevented by the *slot* in the bottom of the *body* from turning, so that the *long groove* (9) in the bolt is brought opposite to it by the rotation of the *bolt*.

The *bolt* is now securely locked by the two *lugs* having entered their *recesses*, and the *bolt lever* having entered its *recess* (31), the *mainspring* is fully compressed, and the *cocking-piece* and *striker* are held back by the *sear*.

7. On pressing the *trigger* the *rounded portion* (42) of its head bears against the bottom of the *body* and slightly depresses the *nose* of the *sear*. The *rear point* (43) of the head of the *trigger* then bears in its turn against the bottom of the *body*, and the *sear nose* is thereby depressed until it frees the *cocking-piece*. The *striker* then flies forward under the influence of the *mainspring*, and, as the *long groove* in the *bolt* is opposite the *cocking-piece*, it is able to go forward sufficiently far for its point to pass through the face of the *bolt*, and strike the cap.

During the depression of the *sear nose* the *safety stud* (38) rises through its hole in the *body* and enters the smaller *depression* (S) in the surface of the *bolt*, and the *spiral spring* (41) which surrounds it is compressed between the *sear* and the top of the *spring seating* in the *body*. *If the bolt is not fully closed, the small depression will not lie immediately over the safety stud.* Consequently, if an attempt is made to press the *trigger* the *safety stud* will meet the cylindrical part of the *bolt* and will not be able to rise far enough to allow the *nose* of the *sear* to be depressed sufficiently to free the *cocking piece*. The *trigger* will thus be inoperative and the firing of the rifle until the *bolt* is securely closed is made impossible by the action of the *safety stud*.

8. When pressure on the *trigger* is relaxed the *sear spring* forces the *front end* of the *sear* down, causing the *sear nose* to rise into the *slot* of the *body*.

9. To remove the *bolt* from the rifle, *withdraw it to its* full extent, pulling outwards the *thumb-piece* (49) of the *bolt stop*, and drawing the *bolt* out of the *body*. To replace the *bolt* in the rifle, press the *magazine platform* down to allow it to pass.

10. *To remove the magazine bottom plate, spring and platform.*—With the point of a bullet press the *magazine catch* (58) inwards, and slide backwards the *magazine bottom plate* (57), when the three parts will come out together. Slide the ends of the *spring* (60) out of the *recesses* in the *bottom plate* and *platform*, raising the bent ends to allow the *spring* to move backwards.

11. *To assemble the magazine bottom plate, spring and platform.*—Replace the ends of the *spring* in the *recesses* in the *bottom plate* and *platform*. That end of the *spring* which engages with the *platform* is slightly narrower than

the other, consequently the *spring* cannot be wrongly assembled Insert the *platform* and *spring* into the *magazine*, press the *bottom plate* fully home, and slide it forward until the *catch* engages

80. *Instructions for Cleaning*

1 The instructions in Chapter V will be followed, but paragraphs will be modified as follows to make them applicable to the Pattern 1914 rifle

2 **The action and outside.**—Thoroughly clean the *bolt*, paying particular attention to the face of the *bolt*, the *striker point*, the *cannelure*, the *claw* of the *extractor*, and the *slot* in the *split lug* See that there is no dirt in the *grooves* in the rear end of the *bolt*, in the *slot* in the *bolt plug*, or in the *locking bolt hole* in the *lever*, and that the *gas escape holes* are clear Clean the *safety catch recess* in the *cocking-piece* The *bolt* should be rubbed over with a piece of oily flannelette before being replaced in the rifle.

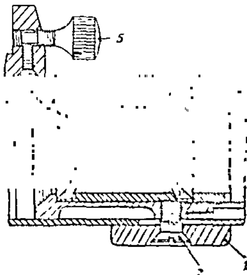
3 Wipe the inside of the *body* and the entrance to the *chamber* with a piece of oily flannelette, removing all *dirt* from the *guide grooves* and from the *lug recesses* in the front of the *body*, and see that the *gas escape hole* is clear. See that there is no dirt in the *recess* for the *bolt lever*. Particular care should be taken that the free play of the fore-end of the *barrel* running through the *nose cap* is not checked by the presence of dirt or grit, as this will affect the accuracy of the rifle, and is likely to cause the sniper to suspect the telescope, when the trouble is only a matter of the care and cleaning of the rifle.

4 Wipe the exterior of the rifle with a piece of oily flannelette, removing all dirt from the *aperture* on the *backsight*, and from the *notches* for the *spring catch*, and from the *charger guides*.

at the other, is supplied with each telescopic sight. The beaded end should be fitted over the eye-piece body of the telescope

PLATE 45.

FIG. A.



82. *Detail and Sequence of Instruction*

1 Method of attaching the telescope to the rifle.—The *front fitting* of the telescope has two *legs*, which hook into the *front fitting* on the *body* of the rifle The *rear fitting* on the telescope has a single *leg*, the squared end of which drops into the *rear fitting* on the left side of the *rifle body*, and is secured by a *thumb locking bolt*

Note —The number on the telescope must agree with the barrel number of the rifle

2. Method of focussing—

- i Remove the telescope from the rifle, and release the screw which clamps the *focussing slide* (2) Holding the telescope steady, look through it as if using an ordinary telescope, with the eye about 4 inches away, and obtain a full field of view.
- ii Adjust the focus by moving the *slide* (1) backwards or forwards to suit the eye, and tighten up the *clamp screw* taking care not to disturb the corrected position of the *slide*
- iii Replace the telescope on the rifle

3 Method of loading with the telescope attached.—*Chargers* cannot be used unless the telescope is removed. When the telescope is attached, charge the *magazine* with five rounds singly

4 Adjustment of the sight.—The telescope is fitted with an adjustable *range scale* mounted on a *drum-head*, and clamped by a *milled head screw* (5).

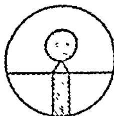
This scale is marked off in lines numbered from 1 which figures represent hundreds of yards

To adjust the *sight*, release the *milled-head screw*, and turn the *scale* with the thumb and forefinger until the line representing the required range corresponds with the zero line (7) on the *saddle* (8). Then tighten the *clamping screw*.

5. Method of aiming.—The eye should be about 4 inches from the end of the telescope, close to the rubber eye-piece, which should be adjusted for this allowance

Aim is taken by obtaining a full field of view through the telescope, so that the *hair-line* across the *pointer* appears horizontal, and the tip of the *pointer* touches the centre of the lowest visible part of the mark, and is in the centre of the field of view (*see* diagram) By looking straight through he telescope this centring becomes automatic.

FIG. 8.—CORRECT AIM.



Note.—A floating vision indicates that the eye is either too near or too far from the telescope.

6. Method for the adjustment of elevation.—The *drum-head* of the *elevating screw* is fitted with a movable *range scale ring* (3), upon which the *range scale* is engraved.

This *ring* is normally secured by a *washer* (6) and two *fixing screws* (4) to the *drum-head* of the *elevating screw*. If, therefore, at any time it is found that the elevation indicated by the *scale* is wrong for any given range, it can be put right by unclamping the *range scale ring*, adjusting the *pointer* by shooting at a known range, and then turning the *range scale ring* to indicate this range before clamping it once more to the *drum-head* of the *elevating screw*.

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skill, but, as in games, he must play for his side and not only for himself. He must be accustomed to place himself under the control and leadership of his section commander and work in his team, because control and a degree of cohesion are essential to the success of the close combat. In an assault all ranks go forward to kill, and only those who have developed skill and strength by constant and continuous training will be able to kill.

6. *The spirit of the bayonet*.—The spirit of the bayonet must be inculcated into all ranks so that in the attack they will go forward with that aggressive determination and confidence which ensures the success of an assault, and which despite danger and exhaustion will hearten the soldier to seek close combat with his opponent.

7. *Continuity of training*.—The essence of bayonet training is continuity of practice.

8. *Recruit's course*.—The recruit's course is divided for convenience into seven lessons.

9. *Trained soldier's course and daily practice*.—Half-an-hour a day, as often as possible, should be devoted by trained soldiers to practice in bayonet training. By this daily practice, accuracy of direction, quickness, strength and endurance are developed, and a soldier is accustomed to use the bayonet under conditions which approximate to actual fighting. Correct action with the bayonet will thus become automatic. This half-hour should be apportioned to (i) pointing at training sticks at varying distances and directions; (ii) parrying training sticks; (iii) dummy work; (iv) counter charges; and (v) the assault practice.

In the case of assault courses on rifle ranges, the range warden will be responsible for upkeep and repairs.

2. *Sacks.*—Sacks for dummies will be filled with straw in such a way as to afford the greatest resistance without injury to the bayonet

Dummy sacks should be hung from gallows by a double suspension from the cross-bar to the top corners of the sack and will be weighted or tethered to the ground from the bottom corners

3. *Aiming marks* —For practising direction an aiming mark must always be painted on both sides of the dummy. By constantly changing the position of the mark the "life" of the dummies will be prolonged

4 For the pointing and parrying practices a light stick, 5 feet to 5 feet 9 inches long and 2¼ inches to 4 inches in circumference with ring for thrusting and pad, will be provided for every two men (*See* Fig 9)

5 *Care of weapons —The greatest care should be taken that the object representing the opponent and its support should be incapable of injuring the bayonet or butt Only light sticks are to be used for parrying practice. Bayonets will be kept sharpened*

The chief causes of injury to the bayonet are insufficient instruction in the bayonet training lessons, failure to withdraw the bayonet clear of the dummy before advancing, placing the dummies on hard, unprepared ground, and using unsharpened bayonets.

6. *Bayonet fencing with spring bayonets.*—Individual fighting with the spring bayonet is a valuable auxiliary to train men in skill at arms. Weapons for this purpose form

part of the equipment of ... be available for the purpo... voluntary instruction

7 *Standardization*.—The follo... training is approved and standard...

(1) The training stick, 5 feet to 5 fee...

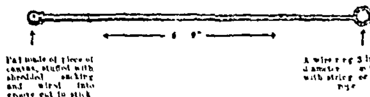
(2) Sack dummies for pointing practic... courses

(3) The "mad minute" course

(4) The tin ring course

(5) The assault course

FIG 9.—THE TRAINING STICK.



Nos. 3, 4 and 5 will be made available in the neighbourhood of all barracks at which infantry are quartered.

8. Plates 59, 61 and 63 illustrate the normal courses, but these will be modified to suit local conditions.

B 2

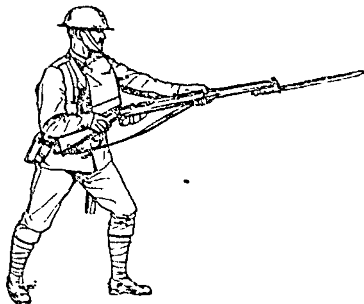


PLATE 46.—"ON GUARD" (LEFT FOOT FORWARD).

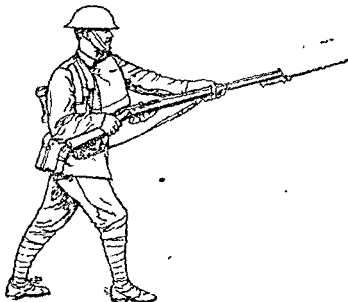


PLATE 47.—"ON-GUARD" (RIGHT FOOT FORWARD).



PLATE 48.—"THE HIGH PORT."

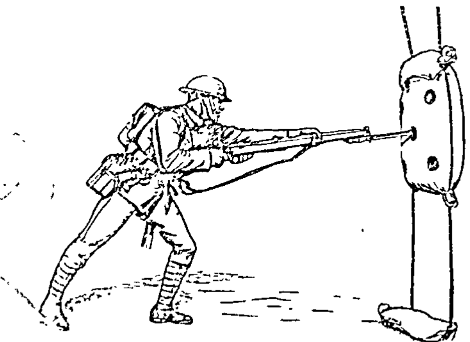


PLATE 49.—"LONG POINT."

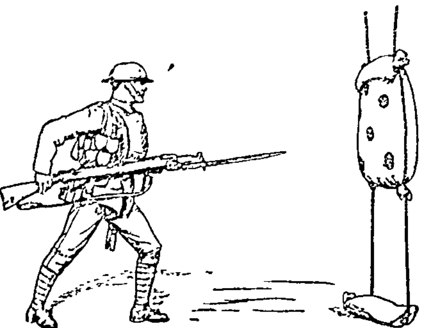


PLATE 50—"THE WITHDRAWAL"

14 *Pointing at marks on dummies*—The men will be taught to bayonet a mark painted on a dummy, first stationary, and then advancing. The advance must be made in a practical and natural way, and should be practised with either foot to the front when the "point" is delivered

15 The rifle will never be drawn back to make a "long point" in a forward movement The impetus of the body and the forward punch of the arms supply the necessary force to penetrate

16 The bayonet will be withdrawn immediately after the "point" has been delivered and the forward threatening attitude be assumed on the left side of the dummy in anticipation of meeting another enemy

17 Unless the rifle is firmly gripped it is liable to injure the hand

18 The principles of this practice will be observed when pointing at dummies in trenches, standing upright on the ground, or suspended from gallows and should be applied at first slowly and deliberately *No attempt must be made to carry out the assault practice before the men have been carefully instructed in, and have thoroughly mastered, the preliminary lessons.*

Lesson 3.—The right and left parry (scabbards on).

19. Men should be taught to regard the parry as part of an offensive movement, namely, of the "point" or butt stroke which would immediately follow it in actual combat For this *reason parrying* must always be accompanied with a slight forward movement of the body

20. "*Right parry*"—From the position of "on-guard," vigorously straighten the left arm without bending the wrist



PLATE 61.—"THE WITHDRAWAL" (USING FOOT)

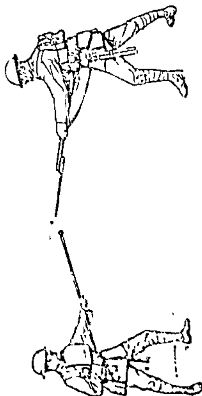


PLATE 32—"PARRYING" (USING TRAINING STICK)

Lesson 5.—The jab, or upward point.

30 *The "jab," or "upward point"*—From the position of the "short point" shift the right hand up the rifle, and grasp it above or below the *backsight*, according to the range of the target, at the same time bringing the rifle to an almost vertical position close to the body, and, from this position, bend the knees and jab the point of the bayonet upwards into the throat or under the chin of the opponent In jabbing, the point of the bayonet should be driven home, principally by an upward heave of the legs and body, with only a small movement of the hands and arms (*see* Plates 55 and 56)

31 From the "jab" position men will be practised in fending off an attack made on any part of them by an opponent When fending off a point at the legs, the position of the right hand may have to be lowered on the rifle to prevent a sweeping movement

32. When making a "jab" from the "on-guard" position, the right, being the thrusting hand, will be brought up first

33 The jab can be employed successfully in close-quarter fighting in narrow trenches and when "embraced" by an opponent

Lesson 6.—Methods of injuring an opponent.

34 It should be impressed upon the section that, although a man's "point" has missed or has been parried, or his bayonet has been broken, he can, as "attacker," still maintain his advantage by injuring his opponent in one of the ways described in the following paragraphs.



PLATE 56 THE "JAB" POSITION (USING RING)

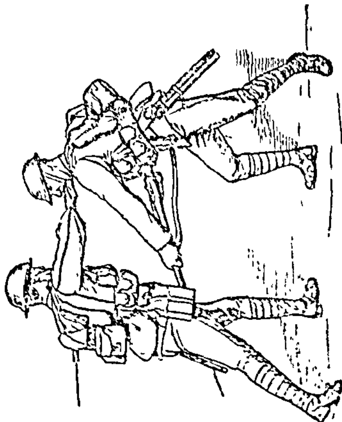


Fig. 66. "The Butt Stroke."

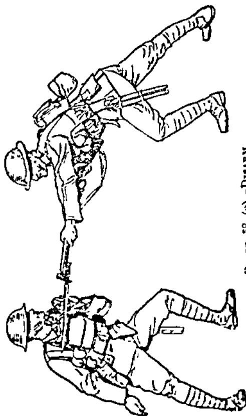


PLATE 53 (n)—DISARM.

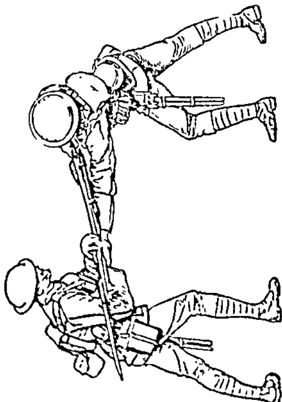


PLATE 75 (b)—DISARM

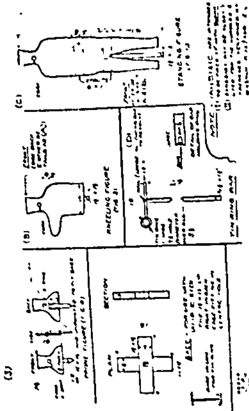


PLATE (J) — APPLIANCES FOR "TIN RING" COURSE.

iv. Having bayonetted four rings, the firer will halt and fire one round at a target, from the "standing" position.

v. He will then straightway continue down the second side of the course, transfixing the four remaining rings.

vi. At the end of the course he will adopt the "kneeling" position, and fire the remaining two rounds of blank, at the kneeling figures.

3. *Time.*—This practice should be "timed." The time is taken from the command "Fire" to the last round being fired.

4. *Marking.*—In order to stimulate the competitive spirit, the instructor will keep a record of each man's performance, marking as follows:—

Two points for each target hit with blank.
Two points for each ring transfixed.
One point to be deducted for each second over the "standard" time for the course.

89. *The "mad minute" course.*

1. On the completion of the Seven Lessons, the following speeding-up exercise will be carried out.

Each man will attack a number of dummies, placed irregularly over a distance of about 50 yards.

The course should be arranged in such a manner as to include all "points" and "butt strokes." Light dummies should be used for practice with the butt, in order to avoid damage. The greater variety in the arrangement of the dummies the better, the principle being that the soldier is allowed to go "all-out" for one minute, while at the same time he must keep sufficiently cool to use his bayonet with skill.

GROUND SACK
GROUND SACK
GROUND SACK
DUMMY
KICK SACK
3 DUMMIES
GROUND SACK
GROUND SACK
BUTT STROKE SACK
GROUND SACK
GROUND SACK
3 DUMMIES IN ECHELON
KICK SACK
DUMMY
GROUND SACK
GROUND SACK
DUMMY FAST TO RIGID POSTS 4' HIGH
GROUND SACK
DUMMY
GROUND SACK
GROUND SACK
DUMMY
JAB SACK
BUTT STROKE SACK
GALLOWS DUMMY
GROUND SACK

PLATE 61.—"MAD MINUTE" COURSE.

90. *The counter charge.*

1. A well-timed counter-assault against an attacking enemy shaken by fire may be productive of far-reaching results.

2. Two parties advancing against each other with the bayonet seldom meet. The party which is possessed with the greater determination and confidence almost invariably causes the other party to waver and turn prior to the actual shock.

3. As proficiency is attained the following counter-charge exercises will be carried out at the commencement and at the end of each daily lesson.

4. *First exercise.*—Advance and charge towards the instructor in single rank with scabbards on bayonets. Length of advance and charge from 80 to 100 yards.

Points to be emphasised:—

(a) Control while advancing steadily at the "high port."
(b) Dash and determination during the last 20 yards.
(c) Resumption of control and the opening of fire after completion of the charge.

5. *Second exercise.*—Two sections about 80 to 100 yards apart extended at four paces interval, to advance and charge through one another, passing right arm to right arm.

The same points to be observed as in the first exercise.

6. *Third exercise.*—Assault and counter-assault.

Attackers (one section).

(i) Advance at the high port from about 100 yards of the position to be assaulted.

(ii) After advancing about 50 yards, break into a steady double and commence the assault

(iii) When within 20 yards of the enemy, charge

Defenders (one section)

(i) Lying in the open or in a trench. Open fire and continue until the enemy is about 50 yards distant

(ii) Advance to the front of the position without loss of time, assuming the "on guard" position, and

(iii) Charge the enemy, when the latter are about 25 yards distant, in order to gain a moral advantage

Points to be emphasised —

(i) Good fire orders at commencement.

(ii) "Timing" of the counter-charge, i e, judging the right moment for the defenders to leave cover.

(iii) Control during movement

7 When carrying out the exercises described above, the following qualities should be developed —

(a) *Determination* —Each man as he advances must select an individual opponent to kill, and must concentrate all his thoughts upon that determination He must keep his eyes upon the selected victim and upon him alone.

(b) *Control* —While still keeping his eyes upon his victim each man must develop a "collective sense," which enables him to keep touch with the men on his right and left.

Note —In addition to being a means of stimulating the man's brain during instruction, counter-charges form an excellent means of developing dash, strengthening the leg muscles, and improving the wind.

fashion, the moral effect of a seemingly irresistible onset is lost, and the defenders may be given time to dispose of their opponents in detail

(d) The actual charge or rush in will be made over a distance not greater than 20 paces. Within the last 10 yards, and before closing with the enemy, the rifle will be brought to the threatening, yet defensive, "on guard" Cohesion will, as far as possible, be maintained until actual contact with the enemy occurs

(e) As soon as the defensive post or locality has been taken and occupied, every precaution will be taken against a counter-attack The pursuit and repulse of a counter-attack by fire will invariably be practised, with or without ammunition according to the safety area of each assault course In this way these actions may become second nature.

92. *Leadership in the assault*

1 It is essential that leaders, i.e., section commanders should have a thorough knowledge of the tactical application of the bayonet

2 The importance of discipline and a degree of control throughout the conduct of a bayonet assault or close combat cannot be over-emphasised. It must be remembered that in this, as in all other military operations, success can only be achieved through the closest co-operation of all concerned; and that, while individual initiative is not to be discouraged, it must be strictly subordinated to the intention of the leader of the assaulting party.

2 The details, conditions and paraphernalia suitable for a close combat competition, given below, are framed as a guide for such competitions

Close combat competition

3 *Team* —A platoon commander and 2 sections Total: 1 officer, 2 N C Os and 12 privates

4 *Dress* Fighting order, all ranks

5 *Scheme* —

i After delivering fire, to advance from a starting position by successive sections at about 50 paces distance The officer may be with either section.

ii Assault with the bayonet four enemy defence posts.

iii Occupy a final objective and pursue the enemy with fire

6 *Conditions* —

i Starting position from under cover of trench, parapet, wall, etc, about 3 feet to 5 feet high

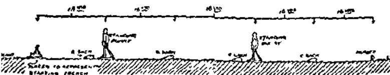
ii Enemy defence posts Each post represented by dummy sacks placed according to plan, but irregularly Two posts will be composed of standing dummies at each of which a long point and a jab will be delivered The other two posts will be composed of ground sacks, at which one "point" will be made

iii Final objective Suitable fire position about 10 yards beyond last of enemy posts

iv Length of assault course from starting position to final objective to be not less than 60 yards and not more than 80 yards. Distance between enemy posts from about 15 to 20 yards

DIAGRAM IN SECTION OF ASSAULT COURSE, SUITABLE FOR ERECTION.

Note. No digging is necessary.



Appliances for Assault Course

SCREEN TO REPRESENT TRENCH

(A)

CANVAS

ELEVATION

SECTION

STANDING DUMMY

(B)

FRONT

SIDE

GROUND SACK

(C)

TARGET

(D)

FRONT

SIDE

PLATE 63.—ASSAULT COURSE.

v Time for course. To be fixed by preliminary trial according to locality, length of course, and nature of ground

Time will be counted from the moment when the rear section receive the order to leave the starting position, until the last man of the rear section reaches the final objective Marks (see para. 7) will be allotted for the fire control and fire discipline before the assault, and at the final objective, but the time taken in delivering and controlling fire at these points will not be taken into account

vi Firing 20 dummy or ball cartridges per man (not leaders) will be carried, pouches and dummies will be inspected immediately before and after each team carries out the competition. At least 10 rounds per man should be fired before the advance to the assault begins, and a further 10 rounds after the assault is completed. This is to allow time for the judges to allot marks for fire control and fire discipline

7. *Marking*—

(a) For fire control and discipline at starting and final positions, 2 marks per man .	24
(b) Each enemy "gallows" post, 2 per man .	48
(c) Each ground "sack" post, 1 per man .	24
Total marks possible .	96

(d) One mark will be deducted for each second over allotted time.

5 The policy of Lewis gun training for the requirements of battle can be divided into three categories:—

(a) The training of the private soldier as a skilled man at arms with the weapon, or in any duties connected with serving the weapon.

(b) The training of the section commander to control and direct the employment of the weapon to the best advantage within the scope of any instructions received from his platoon commander.

(c) The training of the platoon commander to direct the employment of the weapon in co-operation with the other weapons within his command in such a manner that its powers are exploited to the utmost towards accomplishing the task of the platoon as a whole

6 Duties in connection with the handling of the Lewis gun are distributed among all the members of the section, differentiated according to their "numbers" Every member of the section must be able to carry out the duties assigned to any particular "number."

7 [illegible] Lewis gun [illegible] shoul [illegible] expe [illegible] its cl [illegible] when employed in harmony with its characteristics.

The Lewis gun is a shoulder-controlled light automatic weapon, containing delicate mechanism. It is air-cooled and limited to fire action only, being capable of producing rapidly a large volume of highly-concentrated fire.

Training in these subjects, therefore, assumes a place of great importance

14 The close grouping of the shots, however, favours the chances of observation of fire, thereby giving the firer and the controller a guide as to the alteration in laying necessary to hit the target

15 The weight of the gun, spare parts, and ammunition supply, require the men of the Lewis gun section to be of good physique, and able after training to carry the extra weight without detriment to their fighting value.

95. *Sequence of training.*

1. In order that a soldier may fulfil his rôle as a Lewis gunner in battle he must be trained to be capable of carrying out the following duties actually concerned with the handling of the gun —

- (a) To prepare the gun for firing, and maintain it in action
- (b) To carry the gun and get it quickly into action on any type of ground.
- (c) To fire accurately at various rates up to 150 round a minute according to the requirements of various types of targets likely to be encountered in battle.
- (d) To observe fire and correct its application accordingly
- (e) To fire with effect at low flying aircraft.
- (f) To perform the duties assigned to any "number" in a L.G. section.

Stripping component parts.
The remedy and causes of probable stoppages
Anti-aircraft aiming and handling.
(*India —This is not taught.*)
Theory of Lewis gun fire
The characteristics of the Lewis gun.
Examination of gun
Packing of limber
(*India —Limbers are not issued.*)

Note.—Having learnt the above subjects, the man should be able to pass the tests of elementary training, Standard "L," and fire Table L and section practices.

(*b*) Those subjects which go hand in hand with weapon training irrespective of the particular type of weapon, *viz.*.—

Visual training
Recognition of targets
Judging distance.
Judging effect of atmospheric conditions.
Fire discipline
Battle formations
Use of ground

The foundations of these subjects should have been laid during the man's earlier training. When concentrating on his training as a Lewis gunner it should only be necessary to amplify them to meet the special requirements of the Lewis gunner These subjects should be introduced into the training programme concurrently with the subjects mentioned in (*a*) above

memory and is carried out by adhering to the principles set forth in the following paragraphs.

6 The instructor will attempt to draw the information from the man under instruction by putting each point of his lesson to the class in the form of questions. The questions should be such that they will build up point by point the required instruction

7 If he cannot lead the line of thought of the class to the point at which he is aiming by one series of questions he should try a different line of questions He should only fall back on the method of demonstration or explanation as a last resort to avoid taking undue time over a minor point These latter methods appeal to the imitative rather than to the reasoning faculties, and do not develop the mind in the same degree

8 Having by this process arrived at the correct method of performing any action, the men will each perform the action in turn The instructor meanwhile questions the remainder as to the correctness or otherwise of each man's execution In this way he can bring out many minor points bearing on the subject

9 In some subjects it is unnecessary to use questions prior to calling on a man to carry out an action. In such cases the instructor will simply tell the man to do a certain action, leaving it to the man to think for himself how he will do it Should the man appear unable to think out a method of doing what is wanted, the instructor should guide his thought by getting suggestions from other men of the class The instructor must allow the man full latitude to carry out the action in his own way and only interfere if he sees a likelihood of the gun being damaged or undue time taken.

Handling.

97. *Elementary handling.*

(*India.—Pouch equipment will always be worn.*)

1. Training under this heading is designed to teach men to bring the gun quickly into action, correctly mounted in a position suitable for firing.

2. The gun, etc., having been placed in a position suitable for carrying out the exercises, the section falls in. The men form line in rear of the gun and number from right to left.

3. On the order "**Take post**" being given, No. 1 lies down behind the gun. He at once examines the gun to see that it is ready for action, looking especially to: *Barrel mouthpiece, clamp ring, gas regulator key, mounting adjustment, sights, feed mechanism, bolt and piston rod.*

(*India.—He will also examine the spare parts in the wallet to see that they are ready for use if required and places the wallet in his pocket or haversack.*)

4. No. 2 simultaneously lies down about two paces to the left of No. 1. He slings the *spare parts bag* over his left shoulder and examines all the *magazines* in the *carrier* to ensure that they are correctly filled and undamaged. He also examines the *spare parts* to see that they are ready for use when required.

(*India.—No. 2 simultaneously lies down about two paces to the left of No. 1. He examines all the magazines in his pouches to ensure that they are correctly filled and not damaged.*)

5. On completion of his examination he reports to No. 1 "Ammunition and *spare parts* correct," or otherwise, and hands a *magazine* to No. 1.

(*India.—Delete "and spare parts."*)

10. The instructor should rarely ask the same man two consecutive questions. As a general rule he should put each question in turn to a different man, always varying the order in which he selects the individual By this means the same line of thought is kept running through the minds of the whole squad and any inattention is at once exposed.

11. At the end of each period of instruction the instructor will summarise the main points which have been learnt and satisfy himself that no man of the squad is left in doubt about any point of that particular lesson

12. The instructor must have a thorough knowledge of the subject he is about to teach. He must not attempt to teach too much in any one lesson. A few definite points learnt and understood are better than many points only partly understood He must be quite clear in his own mind exactly what he is setting out to teach in any lesson and should only be satisfied that he has taught the lesson when he is sure that the students have learnt the matter which he set out to teach.

HANDLING.

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(*India —He will also examine the spare parts in th wallet to see that they are ready for use if required an places the wallet in his pocket or haversack*)

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5. On completion of his examination he reports to No. "Ammunition and *spare parts* correct," or otherwise, an hands a *magazine* to No. 1.

(*India.—Delete* "*and spare parts.*")

13 When No 1 is ready to open fire he calls out "On" to No 2, who will raise his right hand over the shoulders of No 1, and at the same time watch the section commander for signals

14 On the command, "Fire," No 2 will shout "Fire," whereupon No 1 will press the *trigger* and fire in short bursts

15 On the command **Change** (*magazine*), No. 1 (keeping the *butt* in his shoulder) will press the *catch* of the *magazine* to the right with the thumb of his right hand. At the same time No 2 will press upwards the *centre block* of the *magazine*.

16 Having removed the *magazine* from the *magazine post*, No 1 will pass it, with the open side upwards, under the gun to No. 2

17 No 2 places another *magazine* on the gun, and No 1 loads and continues firing (See Plate 64.)

18 On the command **stop** No. 1 will pull back the *cocking handle* (if forward) and, assisted by No. 2, change *magazines*. He will then place the *butt* on the ground and await a further command

19 On the command **Unload** No. 1 will remove the *magazine*, press the *trigger*, pull back the *cocking handle*, [illegible] *backsight*. [illegible] ridges, the [illegible] e the posi- [illegible]

20 Both No 1 and No. 2 will then rise from the gun, and No 1 reports "No —gun clear."

21. On the command **Unload without firing**, the action will be so as for the command "Unload," with the exception that, after removing the *magazine*, No. 1 w

"cease firing" position, and No 2 replaces the *magazines* in the *carrier* and moves to the "cease firing" position (see special note 1)

(*India*, For "*carrier*" substitute "*pouches*".

23 **Signals.**—The following signals will be used:—

"Action."—Both arms raised and lowered in line with the shoulders

"Ready to open fire."—No. 2 raises his hand over the shoulders of No 1

"Stand by, ready to fire."—Hand raised.

"Fire."—Hand lowered to side

"Stop."—Hand waved horizontally

"Cease firing."—Arm circled from shoulder.

NOTES FOR INSTRUCTORS

Preliminary.—In teaching elementary handling the subject should be divided progressively into stages which gradually work up to the stage at which the handling actions be carried out by word of command and signals.

Subjects.—The progressive stages should be:—

Working up to—	Progressive Stages.
I.—Take Post	i Class arrangements (falling in and numbering off, etc) ii Action of No 1 iii Action of No 2 iv. Carry out by word of command.
II.—Action	i. No 1 carrying forward and placing the gun in position. ii Position of No 2. iii Repeat i and ii, adding loading iv Repeat iii., adding adjustment of *sights* and aiming v. Repeat iv, adding firing. vi. Carry out by word of command.

Working up to—	Progressive Stages
III.—Change Magazines .	i Each action of Nos 1 and 2 ii Carry out by word of command.
IV.—Stop . . .	i Each action of Nos 1 and 2 ii Carry out by word of command
V.—Unload . .	i Each action of Nos 1 and 2 when unloading by firing ii Each action of Nos 1 and 2 when unloading without firing iii Carry out i and ii by word of command
VI.—Cease firing .	i Each action of Nos. 1 and 2 in preparing the gun for movement. ii Each action of Nos 1 and 2 in moving to the "cease firing" position iii Carry out by word of command.
VII.—Signals . . .	i Teach the signals and test recognition. ii Carry out Elementary Handling, substituting signals for words of command.

SPECIAL NOTES.

1. Training in this subject should be carried out on level ground, and the distance between the "Action" and the "Cease firing" positions should be about 5 yards

2. From the time the recruit has learnt how to carry out the actions required for elementary handling he should receive constant practice, so as to ensure that he instinctively carries out the correct action on any given word of command. This practice comes under the heading of "Handling exercises." As the man's training progresses, the

exercises should include any further stages of manipulation which have been learnt, such as immediate action and stoppage remedying

3. In timing the pace of these exercises the instructor should gradually shorten the interval between his words of command to conform to the increased efficiency of the section At the same time, he should be careful to balance the claims of speed with those of accuracy of manipulation.

98. *Advanced handling.*

1 [illegible] purpose of [illegible] ground fea[illegible] o secure the [illegible] the gun for fire action

2. The use of both natural and artificial cover will be practised in mounting the gun for action.

3. The way in which the gun should be mounted will be *determined in every case by the shape of the ground.*

4 Suitable exercises include:—

(a) *Mounting the gun for firing over or round cover of varying heights*, such as breastworks, trench parapets, banks, shell-holes, minor undulations, hedges or undergrowth giving cover from view. The types of position selected should be such that sometimes the *field mount* is used and at other times not used.

(b) *Firing from behind the crest of a gentle slope.*

(c) *Mounting the gun on uneven ground* which necessitates adjustment of the length of the legs of the bipod.

(d) *Methods of crawling with the gun.* As crawling is fatiguing and slow, it should be limited normally to movement over the last 2 or 3 yards on to a fire position, or to crossing short exposed stretches in an otherwise concealed line of approach.

Crawling should only be employed when other forms of movement would spoil the chance of surprise by disclosing the movement

Nos 1 and 2 carrying the gun together, moving behind cover, which affords concealment only to a man in a crouching attitude

99. *Duties of Nos 3, 4, 5 and 6* (*Home*)

(*For India see p 277.*)

1. The actions of Nos 1 and 2 alone are legislated for in elementary and advanced handling Before the section can, however, work as a team the duties of the other numbers must be understood by every member of the section

2 All members of a section must be able to undertake the duties assigned to any particular number As the number of men in a section at any particular time may vary, the allocation of duties must be sufficiently flexible to meet any variation in strength.

3. The remainder of the section, exclusive of Nos 1 and 2 who are required to fire and feed the gun, have alternative duties, the main ones being:—

(a) To carry and replenish the ammunition supply.
(b) Protective duties.
(c) As riflemen.

4. The normal allocation of duties would be:—

No. 3 responsible for maintaining the chain of ammunition supply between the No. 2 and the other members of the section.

Nos 4, 5 and 6 as ammunition carriers, riflemen, and for protective duties.

5 The subjects to be taught under this section are therefore —

i Methods of carrying the ammunition.
ii Transfer of full and empty *magazines* between Nos. 2 and 3.
iii. Methods by which No 3 collects the full *magazines* from other numbers and disposes of the empty *magazines*
iv Protective duties

6 The amount of ammunition taken into action by the section will vary with the nature of the operation. For training purposes the following scale will be considered the normal —

Carried by the Section Commander .		1 *magazine**
,, ,, No. 1		1 *magazine* on the gun.
,, ,, No. 2†		2 *magazines* in pouch equipment.
,, ,, No 3†	each .	4 *magazines* in pouch equipment.
,, ,, No 4		
,, ,, No 5		
,, ,, No 6		

Total—20 *magazines*, each containing 47 rounds=940 rounds

No 1 carries a revolver and 36 rounds of revolver ammunition

* This *magazine* will be carried in *pouch* suspended to belt on the left end piece on the waist belt

† No 2 will carry his two *magazines* connected by the brace and hung around the neck with both *magazines* in front. Nos. 2 and 3 will each carry an empty *magazine carrier* in addition

No. 2 caries the *spare parts*, revolver and 36 rounds of revolver ammunition.

7. No. 3 will take up a position in the neighbourhood of the gun, under cover if possible, and will transfer his *magazines* from his [illegible] must avoid making [illegible] there is adequate co[illegible] increase the target, [illegible] is too far away he will draw attention to the gun by undue movement when handing up ammunition

8 When No 2's supply of ammunition has been expended, No 3 will hand over his *carrier* to No. 2, and take away No 2's *carrier* into which the latter has placed the empty *magazines*.

9 No 3 then goes to the nearest remaining "number," takes off him *four* full *magazines* with which he fills his own *carrier*, and substitutes the empty *magazines* in the other's pouches If a further supply of ammunition is at hand, the empty *magazines* will be refilled

10 The individual training for protective duties comprises:—

- (a) Development of an eye for ground for the purpose of.—
  - i. Selecting the best lines of advance.
  - ii. Recognising ground features suitable for the next bound of the section.
  - iii. Selecting suitable fire positions.
- (b) Methods of keeping in touch with the section and reporting information by signal.

(c) Two men, working as a pair, reconnoitring areas of ground without undue delay. (*See* "Infantry Training," Vol I, 1922, Section 138.)

(d) Observation When the gun is in action the section commander is fully occupied in observing and directing the fire and will need to employ other men of the section to assist him in looking out for —

i The action of neighbouring sections and of platoon headquarters

ii Fresh targets

iii Location of enemy posts or snipers.

99. *Duties of Nos 3, 4, 5, 6, 7 and 8 (India).*

(For Home see p 274.)

(India —Duties of Nos 3, 4, 5, 6, are not applicable. The following is substituted.—

1. The actions of Nos. 1 and 2 alone are legislated for in elementary and advanced handling Before the section can, however, work as a team the duties of the other numbers must be understood by every member of the Section.

2 In addition to the Section Commander and the Nos. 1 and 2 the section consists of six other numbers together with a pack mule.

3 All members of a section must be able to undertake the duties assigned to any particular number. As the number of men in a section at any particular time may vary, the allocation of duties must be sufficiently flexible to meet any variation in strength.

4. The remainder of the section, exclusive of the Section Commander and Nos. 1 and 2, who are required to control,

(c) Two men, working as a pair, reconnoitring areas of ground without undue delay. (*See* "Infantry Training," fol. I, 1922, Section 138.)

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1. The actions of Nos 1 and 2 alone are legislated for in elementary and advanced handling Before the section can however, work as a team the duties of the other number must be understood by every member of the Section.

2 In addition to the Section Commander and the Nos. 1 and 2 the section consists of six other numbers together with a pack mule.

3 All members [illegible] duties assigned [illegible] of men in a sec[illegible] allocation of dut[illegible] variation in stre[illegible].

4. The remainder of the section, exclusive of the Section Commander and Nos 1 and 2, who are required to control,

[f]ire, and feed the gun, have alternative duties, the main [o]nes being.—

(a) To carry and replenish the ammunition supply

(b) Protective duties

(c) As riflemen

5 The normal allocation of duties would be —

Nos 3 and 4 responsible for maintaining the chain of ammunition supply between the No 2 and the Mule

Nos. 5 and 6 as scouts, ammunition carriers and riflemen

No 7 as liaison between the mule and the gun, his chief duty being to keep in touch with the gun and to give instructions to move the mule in accordance with the tactical situation He will assist as necessary with the ammunition supply and is responsible for sending back to the Company Ammunition Reserve for more ammunition as required

No 8 is the mule leader He is a fully trained member of the section.

6. The subjects to be taught under this section are there[f]ore:—

(i) Methods of carrying the ammunition

(ii) Transfer of full and empty magazines betwee[n] Nos 2 and 3, and between Nos 3 and 4.

(iii) Loading and off-loading the mule

(iv) Handling of the mule.

(v) Scouting and Protective duties.

7. The normal amount of ammunition taken into action by the section is as follows —

Carried by No. 1 .	*. 1 magazine on the gun*
Carried by No 2 .	*3 magazines in pouch equipment.*
Carried by No. 3 .	*4 magazines in pouch equipment.*
Carried by No. 4	*4 magazines in pouch equipment.*
Remaining on mule	*. 6 magazines in ammunition boxes.*

Total 18 magazines, each containing 47 rounds 846 rounds.

Nos. 1 and 2 each carry a revolver and 36 rounds of revolver ammunition; No 1 carries the spare parts wallet. The spare parts bag and the spare barrel, piston rod, etc., normally remain with the mule.

If the Section Commander considers that it is probable that communication with the mule will be difficult he will order the spare parts bag and accessory case to be taken into action by No. 2

The Section Commander and the remainder of the section each carry a rifle and 100 rounds S.A.A. with the exception of Nos 3 and 4 who carry 50 rounds S.A.A.

8 No. 3 will take up a position in the neighbourhood of the gun, under cover if possible. He must avoid making the gun conspicuous. Unless there is adequate cover, if he is too close to the gun he will increase the target, while if he is too far away he will draw attention to the gun by undue movement when handing up ammunition

No. 4 will act as a link, as necessary, between No. 3 and the mule.

9. When No. 2's supply of ammunition is becoming expended , he will signal to No. 3 who will hand over his pouc

equipment complete with 4 magazines to No. 2, and take away No. 2's pouch equipment and empty magazines

10. No. 3 then transfers to No 4 the empty pouch equipment and magazines and takes a full set from No. 4, who then takes the empty magazines to the mule and fills up the pouch equipment with full magazines As only two full magazines will then remain on the mule, empty magazines should be refilled by Nos 7 and 8 should ammunition be available

11 The individual training for scouting and protective duties comprises:—

(a) *Development of an eye for ground for the purpose of:—*
   - (i) *Selecting the best lines of advance.*
   - (ii) *Recognising ground features suitable for the next bound of the section.*
   - (iii) *Selecting suitable fire position*

(b) *Methods of keeping in touch with the section and reporting information by signal*

(c) *Two men, working as a pair, reconnoitring areas of ground without undue delay (See "Infantry Training," Vol I, Section 138.)*

(d) *Observation. When the gun is in action the section commander is fully occupied in observing and directing the fire and will need to employ other men of the section to assist in looking out for:—*
   - (i) *The action of neighbouring sections and of platoon headquarters.*
   - (ii) *Fresh targets.*
   - (iii) *Location of enemy posts or snipers.*

100. *Section handling.*

(India.—The mule being an integral part of the section should always be present, fully equipped, when instruction is being given in Section handling.)

1. A Lewis gun section can manœuvre successfully as a unit only if the members of the section carry out their individual rôles intelligently and in harmony with the mission of the section as indicated briefly by the section commander.

2. When the individual rôles have been carried out by all men of the section in "Elementary Handling," "Advanced Handling" and "the duties of Nos. 3, 4, 5 and 6," *(India.—Add Nos 7 and 8)* the foundations of team work have been laid The next requirement of training is to combine these individual rôles into collective action as a unit

3. The section will first be exercised in "Section Battle Formations," the amount of practice necessary will depend on the previous training which the men have had in the subject.

4 The next stage is to set exercises to practise the section in:—

- i Making a bound from one fire position to another.
- ii. Occupation of a fire position and working the chain of ammunition supply.
- iii. Making a long advance by successive bounds, coming into action at the end of each bound.
- iv. Occupation of a post in a defended locality.
- v. Handling in the dark.

(India.—Add (vi) Tactical handling of the mule.)

one-half of the surface of the *centre disc* painted white, the painted portion should be to the rear.)

iii Press the *magazine* down gently (rotating it slightly, if necessary, in both directions) until the *hook* of the *magazine catch* engages under the *internal cone* of the *magazine post.*

iv Rotate the *magazine* as far as it will go in the feeding direction and then pull back the *cocking handle* The gun will then be loaded, with a round in position in the *feedway* ready to be moved to the *chamber*

4. To unload the gun.—If the *magazine* can be rotated by hand in the feeding direction when the *cocking handle* is forward, it indicates that the *magazine* is empty. If it cannot be rotated by hand, it still contains cartridges.

i Press the *magazine catch* over to the right with the thumb, and lift off the *magazine.*

ii. If the *cocking handle* is in the forward position pull it back and then press the *trigger*, but if the *cocking handle* is in the backward position fire the round in the *feedway*, pull back the *cocking handle* and press the *trigger*. This latter action is necessary to make sure the gun is clear.

5 To unload the gun without firing the round in the feedway:—

i Remove the *magazine* as before.

ii With the point of a live round or the end of an empty case, depress the base of the round under the *tongue.*

iii Seize the bullet of the latter round in the left hand and draw it forward until the point of the bullet is resting on the front of the opening in the *feed-arm*.

iv Holding the *cocking handle* with the right hand, press the *trigger* and allow the *cocking handle* to go forward slowly until the point of the bullet turns over to the right

v Draw back the *cocking handle*.

vi Remove the round with the left hand and then allow the *cocking handle* to go forward

Notes for Instructors

Subject.—The sequence of teaching the above subject should be.—

I.—Loading the *magazine*

II.—Unloading the *magazine*.

III.—Placing the magazine on the magazine post and rotating it.

IV.—Completing the loading motion.

V.—Unloading the gun by firing the round in the *feedway*.

VI.—Unloading the gun without firing the round in the *feedway*.

Note.—Each of these sub-heads should be learnt and practised by every member of the class, before the instructor proceeds to teach the next sub-head.

SPECIAL NOTES.

In the course of the instruction the instructor should impress on the recruit —

1 The object of the *loading handle* and the necessity for it to be pressed fully home into the *socket* of the *magazine*

2. The consequences, if the rim of any one cartridge is not placed behind the *retaining plates* of the *magazine*.

3. To avoid leaving any spaces in the *magazine*.

4 That damage may occur if undue pressure is applied when placing the *magazine* on the *magazine post*.

5 That the position of the cartridge when the gun is loaded differs from that of a rifle. In the rifle the cartridge is in the chamber, whereas in the Lewis *gun it is in the feedway* and the *bolt is* open

6 That the gun is not loaded unless the *magazine* is rotated before pulling back the *cocking handle*.

Kit required —Gun, *magazines, loading handles*, drill cartridges Mk VI, ground sheets.

102. *Holding, aiming and firing*

A.—Holding.

1 To hold the gun in the firing position, the firer lies in a straight line behind the gun with both elbows on the ground

2. He holds the *pistol grip* with his right hand, the fore-finger *reaching round the trigger*, whilst the remaining three fingers clasp the *pistol grip* (the second finger being

CORRECT HOLD

PLATE 70



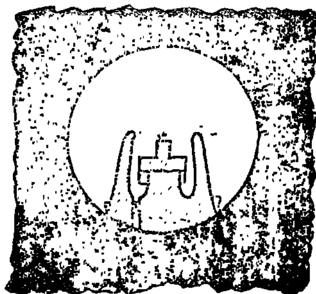
Fig. A.
HOLDING



Fig. B.
HOLDING.

9. The *trigger* should be held back for about half a second and then released, as by this means the rate of fire is regulated in short bursts of 4 or 5 rounds at a time Simultaneously with releasing the *trigger*, the firer should observe *the result of his fire by looking over or round the sights* towards the target

PLATE 71



LEWIS GUN—CORRECT AIM.

10 The firer must always relay his aim between the time of releasing the *trigger* and pressing it again

NOTES FOR INSTRUCTORS.

Subjects.—Instruction in holding, aiming and firing can normally be combined in the same lesson period and must be taught in that sequence

SPECIAL NOTES

1 Although there is no appreciable shock of recoil to "hold" against, the vibrations set up when the automatic action of the gun is in play are such that unless countered, they will throw the gun completely off its alignment. A firm hold is therefore the essential foundation of accurate shooting Any tendency to loose holding, even during some part of instructional training when live ammunition is not being used, is sowing the seeds of failure in marksmanship.

Aiming.

2 Men should be taught to adjust the *backsight* elevation before they are taught to aim.

3 Aiming is best taught as follows:—

First, by explanation of correct and incorrect aims by diagrams

Secondly, the instructor lays the gun (rested in any convenient way) with a correct aim, and lets each recruit see that aim; then the recruit lays an aim and the instructor checks.

Thirdly, the recruit aims at the eye disc which is held by the instructor about one yard from the *muzzle* of the gun.

Note.—Before doing this the instructor must satisfy himself by personal inspection that the gun is unloaded.

4. Although some form of bull's-eye *aiming mark* can be used *in the first* stages, the subject cannot be considered to be learnt until the instructor has satisfied himself that the recruits can aim correctly at landscape aiming marks. Thereafter, the landscape aiming marks should be used for all future training.

Firing.

5. The recruit should be taught to observe his fire by developing the habit of looking at the target over or round the *sights* every time he releases the *trigger*. The sequence of acts being—Aim—press *trigger*—release *trigger*—look—relay aim—and so on.

6. Instruction in aiming and firing should include changing the point of aim along a linear target by, approximately, a width of the foresight.

Kit required.—Gun. Aiming diagrams. An aiming mark. An eye disc. A landscape target. *Magazine carrier* or some other form of rest for the gun when laying an aim.

103. *Stripping and assembling.*

1. When provided, the *combination spring balance* should be used for stripping. In its absence a dummy cartridge may be used.

(*Note.*—Ball ammunition must never be used for instructional purposes except on the ranges.)

2. By these means the whole of the gun can be stripped with the following exceptions:—

(*a*) The *gas chamber* and *barrel mouthpiece* (or *flash eliminator*) for which the special spanner has to be used.

(b) The *clamp ring screw*, which is unscrewed with a screw-driver or the *gas regulator key*.

3. **To strip the gun.**—The gun is stripped in the order set forth in the succeeding paragraphs

4 1st, **Butt.**—With the *cocking handle* in the forward position, insert the point of a bullet behind the *No 1 catch* and press it upwards to disengage the *catch*. With the *No 2 catch* press the *thumb piece* forward. Then rotate the *butt* one-eighth of a turn, underside of the *but* to the right, and withdraw it

5 2nd, **Body cover.**—See that the *feed arm* is over to the right Then draw back the *body cover* until it is clear of its *retaining ledges* on the *body*. Then lift off the *body cover*

6 3rd, **Feed arm**—With the point of a bullet press forward the *latch* Turn the *feed arm* until the *key way* in the *axis hole* clears the *key* on the *magazine post* Then lift off the *feed arm*

7. 4th, **Trigger guard and pistol grip.**—Press the *trigger* in order to disengage the *sear nose* and *plunger* from their holes in the bottom of the *body*. Slide the *guard* back until it is clear of the body. (It should not be completely withdrawn until the *pinion casing*, *bolt* and *piston rod* have been removed)

8. 5th, **Unhook the pinion casing.**

9 6th, **Bolt and piston rod.**—Draw back the *cocking handle* to its full extent, and withdraw it from the *piston rod* by pulling it outwards. Draw out the *bolt* and *piston rod*

10. 7th, **Body.**—With the point of a bullet, press back the *body locking pin* Unscrew the *body* from the *barrel*. In the event of the body being so tightly breeched up that it

cannot be turned by hand, the operation should be undertaken only by the armourer, who will use his raw-hide mallet and strike the *body* on the left side, near the bottom joint of the *locking piece*

After the rear face of the *barrel* is moved from the protection afforded by the *body*, great care must be taken to preserve the projections on it from damage. The *barrel* and *radiator* should never be stood *muzzle* upwards on any hard surface.

11. 8th, **Clamp ring and front radiator casing.**—Unscrew the *No. 1 clamp ring screw* and remove the *clamp ring* and *front radiator casing*. The *No 2 screw* will only be unscrewed so far that the screw is flush with the outside of the left wing of the *clamp ring*

12. 9th, **Mounts, field.**—Unscrew the *band* and withdraw If withdrawn forward—turn it so that the opening passes the *gas regulator*, then turn it again, so that the opening passes the *foresight*.

13. 10th, **Gas regulator.**—With the point of a bullet, lift the *key* until the *stud* on its end is clear of the hole in the *radiator casing* Remove the *key* and unscrew the *gas regulator*.

14. 11th, **Rear radiator casing.**—Slide the *casing* off to the rear.

15. 12th, **Gas cylinder.**—Insert the *piston rod* until about half of the *rack* has entered the *cylinder*. Then, using the *piston rod* as a wrench, unscrew the *gas cylinder*. Take care not to use such force as would fracture the rear end of the *gas cylinder*.

16. 13th, **Gas chamber.**—Using the spanner, unscrew the *gas chamber*.

17. 14th, **Barrel mouthpiece.**—Using the spanner, unscrew the *barrel mouthpiece*. This has a left-handed thread and must be turned as when screwing up an ordinary screw.

When a *flash eliminator* is fitted, the *projections* on the *locking collar* which engage with the *eliminator* must be pressed upwards before the *eliminator* can be unscrewed

18 15th, **Radiator** —

(a) Using the *jack screw*, withdraw the *barrel* from the *radiator*.

(b) [illegible]

muzzle of the *barrel*.

For the method of using the *jack screws*, see Appendix II, Section 3 (5)

19 16th, **Band.**—When the *barrel* comes away, the *band* is left in the *radiator* and can be removed

20 **To assemble the gun.**—*Reverse the operations*

21. In replacing the *barrel* and *radiator* in the *rear casing* great care must be taken to avoid damaging the *projections* on the rear face of the *barrel* Similar care must be exercised in replacing screwed portions, particularly the *gas chamber*, *cylinder* and *barrel mouthpiece*.

22 When it is not found possible to screw the *body* home to position by hand, it should be assembled only by the *armourer*, who will use his raw-hide mallet and strike the *body* on the right side, near the bottom joint of the *locking piece*.

cannot be turned by hand, the operation should be undertaken only by the armourer, who will use his raw-hide mallet and strike the *body* on the left side, near the bottom joint of the *locking piece*.

After the rear face of the *barrel* is moved from the protection afforded by the *body*, great care must be taken to preserve the projections on it from damage. The *barrel* and *radiator* should never be stood *muzzle* upwards on any hard surface.

11. 8th, **Clamp ring and front radiator casing.**—Unscrew the *No. 1 clamp ring screw* and remove the *clamp ring* and *front radiator casing* The *No 2 screw* will only be unscrewed so far that the screw is flush with the outside of the left wing of the *clamp ring*

12. 9th, **Mounts, field.**—Unscrew the *band* and withdraw If withdrawn forward—turn it so that the opening passes : *gas regulator*, then turn it again, so that the opening asses the *foresight*

13. 10th, **Gas regulator.**—With the point of a bullet, lift the *key* until the *stud* on its end is clear of the hole in the *radiator casing* Remove the *key* and unscrew the *gas regulator.*

14. 11th, **Rear radiator casing.**—Slide the *casing* off to the rear.

15. 12th, **Gas cylinder.**—Insert the *piston rod* until about half of the *rack* has entered the *cylinder*. Then, using the *piston rod* as a wrench, unscrew the *gas cylinder*. Take care not to use such force as would fracture the rear end of the *gas cylinder.*

16. 13th, **Gas chamber.**—Using the spanner, unscrew the *gas chamber.*

the rear, and the *feed arm* to the right, raise the *ejector* by placing the nose of a bullet in the hole which is provided for this purpose on the left underside of the *body* below the *ejector*. Lift the *ejector* out.

6. To strip the *pinion group*, press the *pinion pawl* to lower the tension on the *return spring*, then remove the *tension screw*, withdraw the *return spring*, and then remove the *hub*. With a *punch*, knock out the *pinion pawl axis pin*, and remove the *pinion pawl* and *spring*.

7. To strip the *trigger* and *sear*.—With a *punch*, knock out the *trigger* and *sear axis pin*, and remove the *trigger* and *sear*, taking care not to lose the *plunger* or *spring*.

NOTES FOR INSTRUCTORS

1. **Preliminary.**—This subject should be dealt with under two distinct headings :—

i. *Stripping necessary in order* to clean the gun and to keep it in good order.
ii. *Stripping the component parts* which might break when firing, so that they may be exchanged for spare parts quickly. Only those parts which it is absolutely necessary to move should be stripped when changing a damaged part.

2. Sequence of lessons :—

i. Stripping and replacing each part as far as the removal of the *body* from the *barrel*.
ii. Practice.
iii. Stripping and replacing each part as far as the *gas chamber*.
iv. Practice.
v. Stripping component parts.

7. **How to clean the barrel.**—Normally the gun should be stripped in order to clean the *barrel*. If it is impracticable to strip the gun, proceed as follows:—

i. Pull the *cocking handle* back until the *sear* engages.

ii. Place a piece of flannelette, about 4 inches by 1½ inches, in the *eye of the cleaning rod, taking care to surround the metal of the cleaning rod with the flannelette*, which must be well oiled.

iii. Insert the *rod* into the *muzzle* and pass it up and down the *bore* until all fouling has been removed

iv. Then replace the oily flannelette with dry pieces and pass through

v. Finally pass freshly oiled pieces through, leaving the *barrel well oiled with G S oil*

Note—If the flannelette is tight and is pushed through ie breech it must be reversed before pulling it back, otherise it will jam

8 If the *chamber* has not been properly cleaned by the bove process, remove the *butt*, draw back the *pistol grip* ufficiently far to release the pinion, and remove the piston id and *bolt* Then place a larger piece of flannelette in ie *front eye* of the *cleaning rod*, insert the rod from the reech end and clean the *chamber*, first with oiled and then ith dry flannelette.

9 **Method of using the double pull-through.**

i. *If rust or metallic fouling is present in the barrel*, remove the *body*

ii. Thoroughly oil the gauze on the pull-through, and drop the weight through the *bore* from the *breech*.

iii. Ensure that the *barrel* is held horizontally, and then, with the assistance of another man, pull

the cord backwards and forwards until the rust or fouling is loosened

iv. The *barrel* can now be cleaned with the cleaning rod and flannelette as already described.

10 When the gauze fits too loosely to clean the *grooves* of the *rifling*, its diameter can be increased by inserting narrow strips of flannelette *under each side* When the gauze is worn out it should be replaced by one of the spare pieces.

11. To clean the gas cylinder.

i. Join up the *cylinder cleaning rod* and screw on to it the *wire brush*.

ii Insert the rod into the *gas cylinder* and work it backwards and forwards a few times

iii Then remove the *wire brush*, replace it with the *mop*, and clean the *cylinder*. Care should be taken that the extreme front end of the *cylinder* is reached by the brush and thoroughly cleaned, for it is at this point that the fouling collects most thickly

If the *cylinder* is found to be a very tight fit on the *gas chamber*, no attempt should be made to force it, but the joint should be first saturated with "oil, mineral, burning" (paraffin) for a time to loosen the rust. On no account should emery be employed to clean the *cylinder*, as this would enlarge the *bore*, and so cause an excessive leakage of gas beyond the *piston head*.

12. To clean the mechanism.—A mixture of equal parts of G S oil and mineral burning oil should be used. If any parts are clogged with dried oil, mineral burning oil (paraffin) should be used to remove it. After cleaning each

ii. When the *cocking handle* has been drawn back to such a distance as will give the required increase of tension, allow the *pinion casing* to drop so that the *pinion* is out of engagement with the *rack*.

iii. Then push the *cocking handle* fully forward, raise the *pinion casing*, slide forward the *trigger guard*.

iv. Replace the *butt*.

(*b*) **To decrease the tension of the spring—**

i. Allow the *pinion casing* to fall so that the *pinion* is not engaged with the *rack*, and draw back the *cocking handle*.

ii. When the *cocking handle* has been drawn back to such a distance as will give the required decrease of tension, press up the *pinion casing* with the left hand to engage the *pinion* of the *rack*, and slide forward the *trigger guard*. This action will cause the *cocking handle* to fly forward.

iii. Replace the butt

6. *Place an empty magazine on the gun and work the cocking handle* to see that the *feed mechanism* is working correctly.

7. Before filling, examine each *magazine* to see that the *separating pegs* are not broken or bent, and spin the *magazine* on the *loading handle* to ascertain that the *pan* is not distorted, and that it rotates freely.

8. See that the *magazines* are carefully loaded. If the cartridges jam while passing into the *magazine*, the latter should be emptied and examined to ascertain the cause.

9. See that all the spare parts and tools are in the *spare parts* bag and gun chest respectively.

(India.—9. See that all the spare parts and tools are in the wallet and spare parts bag respectively.)

10 See that the *oil can*, the *oil bottle* in the *butt*, and where it is fitted, the *oil receptacle* in the *spade handle grip*, are full of oil

11. Examine the *field mount*, and see that the *legs* are stopped effectively when in their forward position.

12 See that the *gun*, *magazine*, and *spare parts bag* are properly secured to avoid loss or damage in transit.

108. *Points to be attended to during firing.*

1 The *magazines* should be kept in their pouches or *carriers* until they are required, and empty *magazines* should be replaced in the *carrier* as soon as possible Great care should be taken to prevent any damage or distortion of the *rim* of the *magazine* which would cause a fault in the *feed*, and also to avoid the entry of dirt or grit into the *bullet grooves* in the *centre block*.

2 During a temporary cessation of fire, if time permits, the gun should be unloaded, and the *bolt* and *striker post* oiled The weight of the *spring* should be tested and any necessary adjustment made. The *spring* tends to lose strength as it becomes heated. It should not in normal circumstances be allowed to fall below 12 lbs., otherwise the violence of the backward movement is likely to break the moving parts.

3. A partially emptied *magazine* should be replaced by a full one when fire ceases temporarily. Empty or partially empty *magazines* must be filled without delay, provid ammunition is available.

4. In cold weather the amount of oil used for lubrica should be reduced to a minimum, as it is likely to con and affect the working of the mechanism.

5. When the gun ceases firing, and on opening the breech it is found that a cartridge case has been withdrawn from the *chamber*, the case must be carefully examined to see if the propellant has been ignited, if not, the bullet will most likely be found in the *bore* near the *breech end*, and should be removed by means of the *cleaning rod* inserted from the *muzzle*. In all cases the *reflector mirror* should be used to see that the *bore* is clear before firing is resumed.

109. *Points to be attended to after firing*

Immediately after firing.

1. See that the gun is unloaded [*see Vol. II, Sec* 11 (4).]

2. See that the *bore* and *chamber*, and also the *gas cylinder* and *piston rod* are well oiled immediately firing as finished

3. See that the *return spring* is eased The *cocking handle* will be in its forward position when this has been done.

4. See that any live cartridges which may be among the empty cases are collected

On return to quarters.

5. See that the gun is thoroughly cleaned, without delay. All parts of the *mechanism*, as well as the *magazines*, must be examined at the same time to see that they are in good order.

6. See that any repairs to the gun which may be necessary are carried out by the armourer, and that the unserviceable parts which have been replaced from the spares are exchanged for serviceable parts from store to complete the spare equipment.

7. Reduce the weight of the *return springs* to about 4 lbs

MECHANISM AND STOPPAGES.

110. *Mechanism, gas and spring*

A.—Action of the gas.

1. When a round is fired the gases force the bullet up the *bore*, and when it has passed the *gas vent* in the *barrel* a portion of the gases rush with great force through the *vent* into the *gas chamber*, and thence through the *hole* in the *gas regulator* on to the *head* of the *piston rod*, driving it back.

2. The *rack* on the *piston rod* rotates the *pinion* and so winds the *return spring*.

3. During the first 1¼ inches of travel the *bolt* and the *feed arm* remain stationary, but then the right side of the *striker post*, working against the face of the *cam slot* in the *bolt*, rotates the *bolt* to the left so that the *lugs* are clear of their *recesses* in the *body* and in line with the *guide grooves*.

4. The *rear* of the *striker post* then comes against the *rear end* of the *slot* and the further backward travel of the *piston rod* carries back the *bolt*.

5. As the *bolt* moves back, the *extractors* withdraw the empty cartridge case from the *chamber*.

6. The *boss* on the *feed arm actuating stud*, working in the *groove* in the underside of the *feed arm*, carries the latter over to the left.

15 The *feed arm* has then been brought over the *cartridge opening* in the top of the *body* into which the *cartridge* has been forced by *cartridge guide*.

16 The *No 1 left stop pawl*, which has been pressed back by the rotation of the *magazine*, springs forward again and is ready to prevent any rotation of the *magazine* in a contrary direction

17 During the whole of the backward movement of the *piston rod the rack* has caused the rotation of the *pinion* and consequent tension on the *return spring*.

B.—Action of the return spring.

18. The actions caused by the force of the gas cease when the *piston rod* is arrested in its backward travel. The *spring* then comes into play and moves the *piston rod* forward until the *bent* is caught and held up by the *nose of the sear*

19 If the *trigger* is now pressed, the *nose of the sear* is lowered and released from contact with the *bent* of the *piston rod*. The *return spring* coming into play rotates the *pinion*, thus forcing the *piston rod* forward.

20 The *striker post* now being lodged in the *recess* at the rear of the *slot in the bolt*, and the *bolt* not being allowed to turn by reason of the *guide grooves* in which the *lugs* work, the *bolt* is carried forward with the *piston rod*. The *feed arm actuating stud* is carried forward with the *bolt*, forcing the *feed arm* over to the right.

21 During this movement the *feed arm pawl* passes over the *projection* on the *magazine pan* and engages behind it, whilst the *spring retaining stud* on the *feed arm* presses back the No. 2 *right stop pawl* out of the path of the *magazine*.

next time it is moving forward and holds the *piston rod* and *bolt* in their backward position.

D.—To apply the safety catch.

29. Should it at any time be necessary to apply the *safety catch* with the *cocking handle* in the fired or cocked positions, press up the *safety catch plate* on the side on which the *cocking handle* is, until the *recess* on the *plate* passes over the *shank* of the *handle* and prevents any movement of the moving portions of the mechanism.

Note.—The *plate* on the side opposite to the *cocking handle* should always be kept raised to prevent the entry of dirt into the *body*

30. *To disengage the safety catch.*—Press down the *plate* until the *recess* is clear of the *cocking handle* If the *trigger* has been pressed while the *plate* is up, it will be necessary to pull back the *cocking handle* to disengage the *shank* from the *undercut* in the rear *recess*.

Notes for Instructors

1 **Preliminary.**—Knowledge of the mechanical actions caused by the two forces "gas" and "spring" is the foundation of a man's line of thought in detecting the cause of any stoppages and so grasping the action necessary to remedy it

2. He must, therefore, have a clear mental picture of the mechanical actions caused by each of these forces.

Although aids to establish this picture in the man's mind, such as models, cut guns, diagrams are cinema pictures, are a great help, a good instructor can show it quite clearly by using a gun with certain removable parts detached.

3 The greater part of the instruction in stoppage remedying must be devoted to ensure speedy and correct action in dealing with probable causes, whilst only a limited proportion of the available time should be spent on possible causes.

4 A large porportion of stoppages are remedied by certain actions on the part of the firer which can be learnt as a drill and carried out instinctively whenever the gun stops firing. These actions are termed "Immediate Action" and the stoppages cured by their employment are classified as "Immediate Action Stoppages," whilst those which require a further action for their remedy are classified as "Additional Stoppages."

Whenever a stoppage occurs the first action of the part of the firer must always be to perform "Immediate Action."

5 For the purpose of grouping stoppages, three distinct categories are obtained from the position of the *cocking handle* when the gun stops, *viz* —

- A "first position" stoppage is one which occurs when the *cocking handle* is forward.
- A "second position" stoppage is one which occurs when the *cocking handle* is over the *thumb piece* of the *safety catch*.
- A "third position" stoppage is one which occurs when the *cocking handle* is behind the *thumb piece* of the *safety catch*.

6 When a stoppage necessitates stripping to change any part of the gun *it must be cleared of rounds beforehand.*

7 The use of the strap of the *spare parts bag*, or the *double pull-through* will sometimes be necessary to enable the firer to pull back the *cocking handle*, **but in no case may the** *cocking handle* **be hammered back.**

?AGES

horizontal column, A , B , &c. If the remedy given does column next below will be tried Thus the table will be the gun stops firing, with the *trigger* pressed, the first *handle*)

A	—	—	Cause —Empty *magazine*
B.	—	—	Cause —Misfire.
C.	—	—	Cause —Damaged *magazine*
[illegible]	[illegible]	[illegible]	[illegible] *feed* [illegible] ing
E. If neither is defective —	CHANGE THE PISTON ROD, REASSEMBLE, RELOAD, RELAY AND FIRE.		Cause :—Broken *striker*.
F.	—	—	Cause —*Left stop pawl* worn.

If the *cocking*	*handle* is in t	he *2nd position* —	
0 PULL BACK THE COCKING HANDLE RELOAD, RELAY AND FIRE	—	—	—
11 . .	If the gun fires a few rounds and stops again in the 2nd position	UNLOAD, STRIP DOWN, CLEAN AND OIL If it is undesirable to delay for the prolonged period required for this remedy, try the following expedients — (a) Unload, lower the tension of the *return spring* by about 3 lb., reload relay and fire (b) If the stoppage recurs, unload and oil without stripping the gun, reload, relay and fire If these expedients are tried the gun must be stripped, cleaned and oiled at the first opportunity and the tension of the *return spring* readjusted to normal	—
. . .	If on pressing the trigger, the gun does not fire	UNLOAD WITHOUT FIRING, CALL FOR THE CLEARING PLUG AND REMOVE THE PORTION OF CASE IN THE BARREL, RELOAD, RELAY AND FIRE.	—
2 the *cocking*	*handle* is in	the *3rd position* —	
PULL BACK THE COCKING HANDLE RELAY AND FIRE	—	—	—

n.	—	—	Cause —Hard extraction
R	—	—	Cause —Friction due to dirt in the *gas cylinder, body* or *chamber.*
l	—	—	Cause —Separated case.
k	—	—	Cause —Slight fault in feed

L.	If the gun fires a few rounds and stops again in the 3rd position.	PULL BACK THE COCKING HANDLE, REMOVE THE MAGAZINE, FIRE THE ROUND IN THE FEEDWAY, CHANGE THE CARTRIDGE GUIDE, RELOAD, RELAY AND FIRE	—
M.	If on pressing the trigger gun does not fire	PULL BACK THE COCKING HANDLE AND REMOVE THE MAGAZINE If there are 2 rounds trying to be fed into the gun.	REMOVE THE TOP ONE, CHANGE THE MAGAZINE, RELAY AND FIRE.
		If this stoppage recurs	UNLOAD AND CHANGE THE RIGHT STOP PAWL
N.	—	If the feeding is normal	EXAMINE THE EJECTION OPENING AND CHAMBER If there is an empty case in the chamber and a live round in the feedway.

L.	—	—	Cause.—Weak *cartridge guide spring*
M	—	—	Cause.—*Magazine* rotated too far owing to the *magazine* being slightly damaged
	—	—	Cause.—*Right stop pawl* failing to stop *magazine* rotating too far.
N	UNLOAD WITHOUT FIRING, CHANGE THE BOLT, REASSEMBLE, RELOAD, RELAY AND FIRE	—	Cause.—Broken *extractor*.

O CLEAR GUN CHANGE THE EJECTOR, RE ASSEMBLE RELOAD, RELAY AND FIRE		**Cause**—Broken *ejector*

part is liable to fall into the *bolt or piston way* and so cause the *cocking handle* In this case it is advisable to turn the gun over and shake it gently. Undue force must not be used to pull back the *cocking handle*

Notes for Instructors

1 For instructional purposes this subject should be divided into the two distinct parts, *i.e.*, "Immediate Action" and "Additional Stoppages"

2 The instinctive procedure termed "Immediate Action" should be taught first. When the recruit is proficient in performing "Immediate Action," he can be taught the causes of those stoppages which are cured by this "Immediate Action" (These are printed in thick type in the foregoing table) Then later the recruit comes to the Additional Stoppages, reasoning from the point where the "Immediate Action" failed.

3 It is unnecessary for men to know every detail of the mechanism of the gun, but they require to know the action of certain parts in order to be able to locate the cause of stoppages Consequently, teaching of mechanism should be confined to that which is concerned with each stoppage taught.

4. The following table gives the mechanism that should be taught with each particular stoppage (The letters refer to the stoppage given in the preceding table)

Stoppage	Mechanism
C	Action of the *feed arm pawl*
F	Action of the *left stop pawl*
G	Action of the *magazine centre block* and feeding of rounds from the *magazine*
L	Action of the *cartridge guide* and the control of the round during its forward movement to the *chamber*
M	Action of the *right stop pawl*
N	Action of the *extractors* (extraction and feeding)
O	Action of the *ejector*

5. As the sights are thrown off the target when a stoppage occurs, the instructor should insist on the importance of relaying the gun after every stoppage. To inculcate this practice he should always give an aiming mark when teaching stoppages and their remedy.

6. Possible stoppages should only be dealt with when the soldier can remedy the probable stoppages efficiently. Moreover the object of such instruction will rather be to make him thoroughly conversant with the working of the gun under all circumstances, than to teach him definite remedies.

7. In quarters, when teaching stoppages the gun must be set up to simulate what would be the condition of the gun when the stoppage actually occurs (*see* Section 112, Setting up Stoppages).

Kit required.—Gun and spare parts, complete. Dummies, damaged *magazine*, cut dummies, portion of separated case. Instructional landscape target.

112. *Setting up stoppages.*

1. This subject need only be taught to instructors.

2 It is important that the gun should be made to stop under as nearly as possible the same conditions as would occur if firing live ammunition. When the instructor wishes to convey to the firer that "Immediate Action" has failed, he should say "Gun does not fire," or "Gun fires a few rounds and stops again."

3 Some stoppages cannot be set up, but most of the probable ones are easily arranged The following table is a guide —

Cause.	In Barracks.	On the Range.
1st Position		
A —Empty *magazine*	Use a *magazine* with a single round in it	Occurs automatically.
B —Misfire	Allow the firer to begin firing, and then say "Gun stops"	Place a dummy round in the *magazine*
C —Damaged *magazine*	Use a slightly damaged *magazine*	Place 2 dummy rounds in *magazine*.
D —*Feed arm pawl or spring*	Remove the *feed arm pawl* and *spring*	Place 2 dummy rounds in the *magazine*, and one dummy as the first round in the *magazine* used on "changing" (for D and E)
E.—Broken *striker*	As for misfire and when the complete "I A" has been performed instructor says "Gun still does not fire," and indicates that the *feed arm pawl* is correct	
F —*Left stop pawl*	As for misfire, and when firer has performed the first "I A" instructor says, "Gun fires one round and stops again"	Two alternate rounds, with alternate spaces in the *magazine*.

Cause	In Barracks	On the Range
2nd Position		
G. & H.—Friction	Withdraw the *cocking handle* to eject the empty case but not far enough to feed a fresh round	As in barracks
I.—Separated case	Use a portion of a separated case	Ditto
3rd Position		
K. & L. Slight fault in feed	Press the *trigger* and allow the *bolt* to go forward gently	As in barracks
M.—Double feed, right step pawl defective	When pulling back the *cocking handle* [illegible] hold the pawl back with a thin strip of metal and rotate the [illegible] double [illegible] when the *trigger* is pressed	Do not attempt to set up this stoppage unless a defectively worn right step pawl is available
N.—Broken extractor	Load and place an empty case in the *chamber*	As in barracks
O.—Broken ejector	Load and place an empty case in the *bolt* way in front of the *bolt*	Ditto

Notes for Instructors

Preliminary.—In setting up stoppages, the gun should first of all be firing normally, *i.e.*, the firer should be made to load and fire.

I. The stoppages should be set up while the class, including the firer, have their heads turned away from the gun.

Thus, in "A," the firer loads and fires, thus removing the single round from the *magazine*. Again, in "N," he loads, fires and, after pressing the *trigger* to represent a number of bursts, he should be told to pull back the *cocking handle*, and turn his head away, the instructor then inserts the empty case, and orders the firer to continue firing, saying "Gun stops" when the *trigger* has been pressed, and "Gun does not fire" when the "I.A." has been performed

113 *Examination of the gun.*

1. The following are the principal points to which attention must be paid in examining the gun Except for the replacement of damaged parts from the parts provided as spare, repairs cannot as a rule be carried out by the section The repairs, as well as the tests to be made by means of gauges, will be undertaken only by a qualified armourer.

2 **Barrel.**—See to the condition of *bore, rifling, lead,* exterior and *gas vent*, and that the *projections* on the rear face and the thread on the *muzzle* are not damaged. The *barrel* should only be removed from the *radiator* for examination at infrequent intervals.

3 **Barrel mouthpiece.**—See that it screws up tightly to the *barrel*, and that the threads have not been crossed.

4. **Radiator.**—Examine this for indentations in the *flanges*, and see that the *barrel* fits properly.

5. **Rear radiator casing.**—Examine this for indentations and wear, especially at its forward end.

6 **Front radiator casing.**—Examine this for indentations, and that it fits into the *clamp ring* correctly; *sling swivel* not too loose.

7. Clamp ring.—See that it is firmly screwed up, and that it holds the *front radiator casing* rigidly

8. Foresight.—See that it is in good condition and not loose.

9. Gas regulator and gas chamber.—Examine these for erosion and carbon deposit, see that they are not stuck If they are, apply a little paraffin at the joint, and allow it to soak in to loosen the fouling or rust If fouling has accumulated inside the *regulator*, it should be removed by means of the *gas regulator cleaner*

See that the *gas chamber* is closely and firmly seated to the barrel, that the *screw threads* have not been overstrained, that the *gas holes* are not choked.

10 Gas cylinder — See that the interior is clear of fouling and carbonised oil and that the rear end is not cracked or split

Examine the *screw thread* to see that it is not damaged, and the *bore* to see that it is not distorted or excessively enlarged by wear or cleaning The examination of the *bore* need only be carried out when loss of gas power has been experienced, and then only by an armourer or artificer, in comparison with a new *gas cylinder* It is not necessary for the face of the *gas cylinder* to abut on the *gas chamber*, and overturning is of negligible importance, enlargement of the *bore*, however, may have serious consequences. Other important causes of loss of gas power are friction in the *action*, escape at the junction of the *gas chamber* with the *barrel*, choking of the *gas hole* in the *gas chamber* and of the *gas regulator*.

A *cylinder* which is split at the end can be repaired by an armourer by brazing.

7. **Clamp ring.**—See that it is firmly screwed up, and that it holds the *front radiator casing* rigidly

8. **Foresight.**—See that it is in good condition and not loose.

9. **Gas regulator and gas chamber.**—Examine these for erosion and carbon deposit, see that they are not stuck. If they are, apply a little paraffin at the joint, and allow it to soak in to loosen the fouling or rust If fouling has accumulated inside the *regulator*, it should be removed by means of the *gas regulator cleaner*

See that the *gas chamber* is closely and firmly seated to the barrel, that the *screw threads* have not been overstrained, that the *gas holes* are not choked.

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A *cylinder* which is split at the end can be repaired by an armourer by brazing.

actuating stud Test the ejection with a few dummy cartridges Place an empty *magazine* on the gun and, holding it in check by pressing the left hand on its top, work the *cocking handle* to see that the feed works correctly

26 **Mounts, Field Mark III.**—Examine the *legs* for wear at the corner Any excessively worn should be removed and replaced by new ones, the unserviceable ones being returned to store for factory repair

27 **Magazines.**—Examine thoroughly and test for distortion

28 **Spare parts and accessories.**—Should be examined in the same manner

NOTES FOR INSTRUCTORS

The object of this lesson is to teach the man what to look for when he is examining the gun He should be taught to examine the gun periodically and especially on taking over a fresh gun

The gun should be stripped and each part dealt with thoroughly and put on one side before starting on the next part

Kit required —Gun complete with spare parts and accessories Examples of damaged parts such as a bulged barrel, a cut barrel, &c., when these are available.

114 *Spare parts, diagrams and skeleton guns.*

1. The list of **spare parts** is set out in Appendix II, Vol II All trained Lewis gunners should know what *spare parts* are carried and be able to check for deficies without a written list.

2. A complete set of *spare parts* should be shown and packed in the (*India —Add " wallet and "*) *spare parts* bag by the class under instruction

3 Lewis gun **diagrams** should be hung on the walls of drill halls and barrack room passages as far as the scale of issue permits

4 Any points of the mechanism of the gun not fully understood by any of the class should be further demonstrated by means of **diagrams.** The best value is obtained from diagrams if they are so placed that men have access to them out of parade hours

5. **Skeleton guns** are limited in number, but when obtainable they should be used to clear up any mechanical points about which the class may be in doubt

115 *Packing of the limber*

Details of packing limbers, *etc*, will be found in Appendix VIII

India —Substitute the following for the above section —

115. *" Drill and Instructions for Mule Loading "*

Details of pack equipment are given in Appendix VIII (Vol. II).

(a) On the command " Load up "

(Position of numbers Nos 1 and 3 are on the off side of the mule Nos. 2 and 4 on the near side)

Nos. 3 and 4 each attach one rack to the saddle hooks, and either No. 3 or No. 4 fastens the steadying strap.

Nos. 2 and 4 each place one box in the rack and either No. 2 or No. 4 fastens the securing strap, and attaches

feed bag to the front or rear of the saddle tree as convenient No 3 places one box in the rack.

NOTE —The following are the contents of the boxes:—

Near side.	
Top Box	4 magazines in a half-set of pouch equipment (i e, 2 magazines in each pouch) in *each* compartment. Total 8 magazines.
Bottom Box	4 magazines in a half-set of pouch equipment (i.e., 2 magazines in each pouch) in forward compartment
	2 magazines in a half-set of pouch equipment (i e., 1 magazine in each pouch) and an empty half set of pouch equipment in the rear compartment.
	Total 6 magazines.
Off side.	4 magazines in a half-set of pouch equipment (i e., 2 magazines in each pouch) in the forward compartment
	The spare parts bag and wallet together with any line gear in the rear compartment.

No 1 [illegible]
up gun [illegible]
hangers [illegible]
straps o [illegible]
rack over the gun and ammunition box.

No. 3 attaches the accessories and spare barrel case [illegible] the top of the saddle.

No. 1 passes the surcingle over the load (under the centre bar) and No 2 secures the surcingle.

Note —If there is any chance of the enemy being encountered No 2 and, if considered advisable, Nos 3 and 4 also, should wear the pouch equipment

(b) On Command "Action"*

Nos. 1 and 3 will double back to the off side of the mule.

Nos 2 and 4 to the near side

Nos. 1 and 2 will undo the straps securing the load

No. 1 assisted by No 3 will remove the gun and bring it into action at the place directed by the Section Commander

Nos 2, 3 and 4, if not already wearing the pouch equipment will each put on a belt set either across one shoulder or if time is of utmost importance slung round the neck.

No 2 will join No 1 at the gun position

Nos 3 and 4 will take up the best positions for supplying ammunition

No. 7 will tighten up the straps and No 8 (accompanied by No. 7) will take the mule under cover or as ordered. Nos. 5 and 6 will act as ordered, or remain with the mule

---

* *Note* —The position of the various numbers and the mule on march is as follows:—

2	5	1	N.C.O
4	6	3	
	8 mule		
	7		

Anti-Aircraft Accessories—Lewis Gun.

(India—Section 116 not applicable.)

116 *Description of sights.*

1 **The backsight** (known as "Sight, back, A A. Mark II") is an aperture of ¼-inch diameter, fixed in position on the *leaf* of the ground *aperture backsight* of the gun.

2 **The foresight** (known as "Sight, fore, A A. Mark II") consists of two elliptical rings, one inside the other, with a bead in the centre, and is capable of being moved along the gun

3 **The outer ring** gives the necessary "aiming off" for firing at aeroplanes flying at an altitude of 1,000 feet at a speed of 100 miles an hour, and at an angle of sight of 60°

4 **The inner ring** gives the necessary "aiming off" for firing at aeroplanes flying at an altitude of 200 feet at a speed of 120 miles an hour, and at an angle of sight of 15°

5 In view of the fact that these three factors are rarely if ever likely to coincide at any one moment, the following general rule is given for the use of the *foresight*:—

(*a*) For all machines flying at an altitude of between 500 feet and 3,000 feet, use the *outer ring*.

(*b*) For all machines flying below 500 feet, use the *inner ring*.

6 If, in course of time, the average speed of aeroplanes increases beyond those for which the *sights* are calculat the necessary adjustment can be made by movin

foresight along the gun towards the *backsight*, thus decreasing the sight radius.

7. This adjustment will only be made on the authority of an Army Council Instruction or an order by the Commander-in-Chief in the Field, which will lay down the distance that the *foresight* is to be moved.

117 *Method of fixing the sights.*

(India —Section 117 not applicable.)

1. **The backsight** is fixed permanently to the top of the *angent sight*

2. It consists of two main portions. The larger portion, hich contains the sighting aperture, is placed on the raduated side of the *tangent sight leaf*, with the *block* tting into the recess at the top of the *leaf*. The *sighting perture* is kept uppermost The smaller portion, togeer with a spring washer on the outside, is placed on the ther side of the *leaf*, and the whole is then screwed gether.

3. **The foresight** is fixed on to the *rear radiator casing* by *spring steel ring*, secured by a *vice pin nut*. A *pointer* is attached for aligning with the *foresight* of the gun. *The spring steel ring* should fit closely against the rear edge of the *clamp ring*, and the *vice pin screw* should be on the right side of the gun

4. **To affix the foresight to the gun.**—Slide the *foresight* over the *front radiator casing*, the *rings* towards the ground, and the *vice pin screw* to the **left** of the gun. Slide the *sight* along the *casing* until it is behind the *clamp ring*. Then twist it round until the *rings* are uppermost. Press it up tight to the *clamp ring* and screw until there is no chance of slipping

When screwed up the *pointer* on the *foresight* should be in exact alignment with the *foresight* on the gun.

5 Great care must be taken in putting on and removing the *foresight* that the *spring steel ring* is not strained in any way

6 The *foresight* will be kept permanently on the gun. When not in use, it should be folded back flat on the *radiator casing* When required for use, it should be raised.

118. *Method of using the sights*

(*India —Section 118 not applicable.*)

1 The first two rules for aiming with the rifle apply in this case also, namely:—

i *Sights* upright.

ii Close the disengaged eye

2 The third rule, however, is different, and is divided into three parts, as follows —

iii (*a*) The line of flight of the aeroplane, if prolonged, must pass through the *centre bead* of the *foresight*.

(*b*) The nose of the aeroplane must appear to touch the outer edge of whichever *ring* is being used. This junction is known as the "Point of contact."

(*c*) The "Point of contact" must be in the centre of the *A.A. aperture backsight*.

3 Fire should be continuous, and the gun should follow *the movements of the aeroplane, the outer* edge of the *ring* being kept on the aeroplane, and the *centre bead* on the line of flight.

4 In firing at an aeroplane which is diving directly at the gun, align the centre of the *A.A. aperture backsight* with the *centre bead* of the *foresight*, and aim at the centre of the upper plane of the machine (*See* Plate 73.)

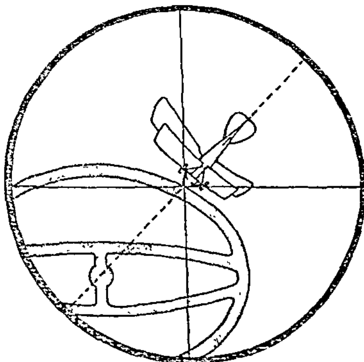
PLATE 73.



AIMING AT AIRCRAFT.



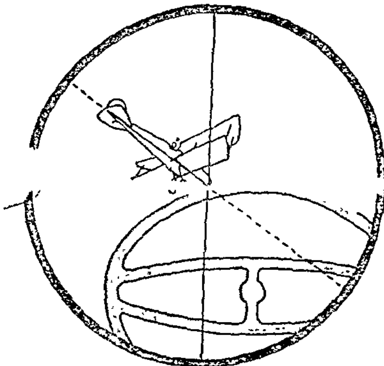
PLATE 75 (a).



Outer Ring in Use. (Altitude: 500 to 3,000 feet.)

Correct.—The aeroplane is flying towards the centre bead, the nose of the aeroplane is touching the outer edge of the ring being used, and the point of contact between the nos of the aeroplane and the outer edge of the ring is in the centre of the backsight aperture.

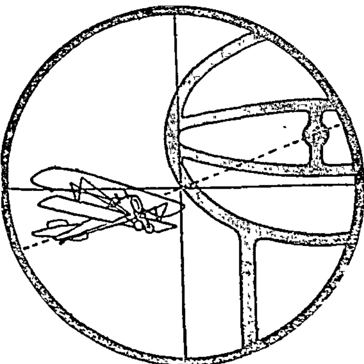
PLATE 75 (b).



Outer Ring in Use. (Altitude: 500 to 3,000 feet.)

Incorrect.—The aeroplane is *not* flying towards the centre bead. The bullets will pass below the target

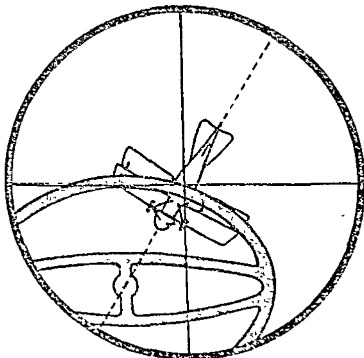
PLATE 75 (c).



Outer Ring in Use. (Altitude: 500 to 3,000 feet.)

Incorrect.—The nose of the aeroplane is not touching th outer edge of the ring. Fire has been opened too soon, the bullets will pass in front of the target.

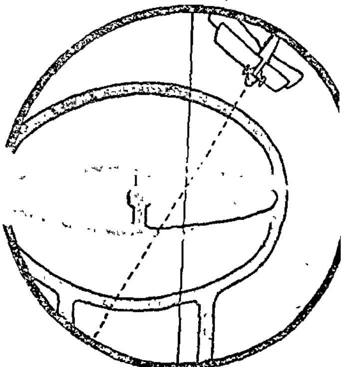
PLATE 75 (c).



Outer Ring in Use. (Altitude: 500 to 3,000 feet.)

Incorrect.—The nose of the aeroplane is not touching the outer edge of the ring. Fire has been opened too late and the bullets will pass behind any vital portion of the aeroplane.

PLATE 75 (f).

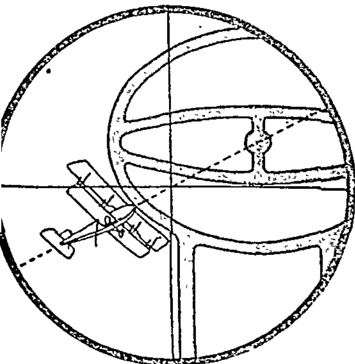


Either Ring in Use.

[illegible]

bullets will pass in front and to the left.

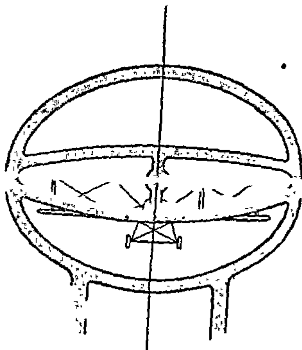
PLATE 75 (*g*).



Outer Ring in Use. (Altitude: 500 to 3,00! feet)

Incorrect.—The point of contact between the nose of t aeroplane and the outer edge of the ring being used is not in the centre of the backsight aperture. The bullets wil pass in rear of the aeroplane

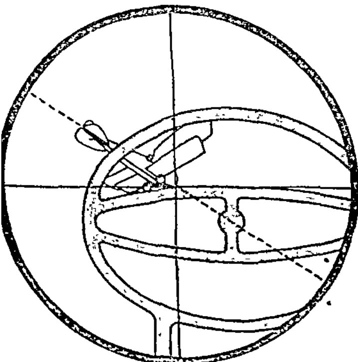
PLATE 76.



Centre Bead in Use.

Correct.— The aeroplane is diving at the position of the gun. Aim has been taken by aligning the bead with the centre of the backsight aperture upon the middle of the upper plane. The bullets will hit the vital parts of the aeroplane

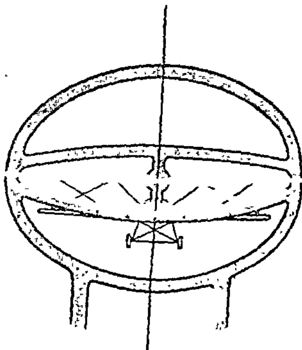
PLATE 77 (a).



Inner Ring in Use. (Altitude: Up to 500 feet.)

Correct.—The aeroplane is flying towards the centre bead, the nose of the aeroplane is touching the outer edge of the ring being used, and the point of contact between the nose of the aeroplane and the outer edge of the ring is in the centre of the backsight aperture.

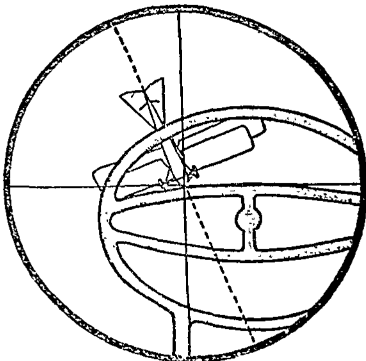
PLATE 76.



Centre Bead in Use.

Correct.—The aeroplane is diving at the position of the gun. Aim has been taken by aligning the bead with the centre of the backsight aperture upon the middle of the upper plane. The bullets will hit the vital parts of the aeroplane.

PLATE 77 (c).



Inner Ring in Use. (Altitude: Up to 500 feet.)

Incorrect.—The aeroplane is not flying towards the centre bead. The bullets will pass to the right.

119. *Stadia range indicator.*

(*India.*—*Section 119 not applicable.*)

1. This *indicator* is merely to show whether a machine is in range or not, and not to measure the exact range.

2. It consists of a flat piece of metal with four circular *apertures*—two for the two-seater type of aeroplane—and two for the single-seater or scout type of aeroplane—and a string 24 inches in length, with a bead at the end.

3. **Method of use.**—Hold the *indicator* as far away from the eye as the string, held against the cheek, will allow.

If the aeroplane fills the *aperture*, it is within range.

If the aeroplane does not fill the *aperture*, it is out of range.

4. Care must be taken to use the *correct aperture* for the particular aeroplane which is to be ranged on.

5. The *indicator* was designed for use against typical two-seater aeroplanes and scouts, if it is desired to make *apertures* for any special type of aeroplane for which the indicator is unsuitable, the required size of the *apertures* can be easily calculated by means of the following formula, having first ascertained the dimensions of the aeroplane:—

$$\frac{\text{Diameter of aperture}}{\text{Length of string}} = \frac{\text{Span or length of aeroplane}}{\text{Range}}$$

The equation should be worked out in inches.

120. *General remarks on training.*

(*India.*—*Section 120 not applicable.*)

1. "It is a principle of air defence that every commander, in addition to arranging for the protection of his command from surprise by hostile aircraft, is at all times responsible, whether on the move or at rest, for dealing with hostile aircraft flying over his command at an altitude not exceeding 3,000 feet."—(F. S. R., Vol. II.)

2 In the case of many commanders their only means of dealing with hostile aircraft is by small arms fire from the ground, for which purpose, the Lewis and Hotchkiss guns are the most suitable weapons

3. The only appliances in addition to the *sights* and *mounting* needed for giving practical instruction in the correct use of the *sights* are a model aeroplane and an aim corrector

4 Simple model aeroplanes can easily be made; the following dimensions are advised, as models made in accordance with them will, when held at the correct distance from the gun, give the same appearance as an aeroplane flying at a height of 1,000 feet and an angle of sight of 60°.

	Width of span	*Length of body.*
Two seater type	12 inches	7 inches
Scout type .	8 inches	6 inches

The model is held 10 yards from the gun.

5 An *aim corrector* is designed for use with the *A.A. Sights Mark II* When fitted on the *tangent sight*, it enables the instructor to follow the aim of the firer and correct it if necessary

6 Two hours should be sufficient for teaching men of average intelligence the use of the *A A. sights*. Constant practice in aiming is necessary, however, in order that no time may be lost during actual fighting in engaging the target. Every opportunity should be taken of aiming at actual aeroplanes that happen to fly in the vicinity of the parade ground.

7. During the first hour of instruction a stationary m should be used, placed so as to represent any direct

flight, the aim being checked by the instructor with an aim corrector

8. When the student is proficient in aiming at stationary models he should be practised in aiming at moving models. For this purpose one of the section should walk about, carrying the model aeroplane on the end of a pole. In every case the instructor should check the aim by means of the aim corrector

9. Methods of training include —

(a) Aiming at models on poles, or painted on the ceilings of barrack rooms

(b) Firing the anti-aircraft practices of the annual courses

(c) The use of cinematograph films, which can be obtained from the Weapon Training Officers of Commands

121. *Anti-aircraft elementary handling*

(India —Section 121 not applicable.)

1 The general instructions for ground elementary handling are equally applicable to anti-aircraft training

2. The sequence is, however, slightly different, and a third "number" is introduced to carry the *mounting.*

3. Ammunition and *spare parts* will be placed on the right of the gun at two paces interval, and the *mounting* another two paces The target will be a model aeroplane

4. On the command "Take post"—

(a) No. 1 takes up his position and examines the gun as in ground elementary handling.

(b) No. 2 at the same time examines his ammunition and *spare parts*, and hands No. 1 a *maga*

(c) No 3 examines the *mounting* and *sling*, and places the *sling* over his left shoulder.

5. No. 3 reports "Correct (or otherwise)" to No 2, who reports to No. 1 "Spare parts, etc., correct," who in turn reports to the commander "No.— gun, ready."

6 On the command "**Aircraft action**" being given (No. 1 repeats this and all subsequent orders):—

i No 3 runs to the firing point indicated, with the *mounting* and sets up the *mounting*, with one *leg* to the rear, at a suitable height for the firer.

ii No 1 follows No 3 to the firing point with the gun and, assisted by No 3, mounts the gun. He then raises the *backsight* and fires without waiting for further orders

(*Note* —The instructor should check this aim with an *aim corrector*)

iii No 2 follows No 1 with the ammunition and *spa parts* On arriving at the firing point he ge his ammunition ready for use.

7 No 3 stands on the right side of No. 1, whilst No. keeps his ammunition in readiness and stands on the left.

8 On the command "**Change**":—

(a) No 3 presses back the *magazine catch*, No. 2 assis in the usual way, and places a new *magazine* the gun.

(b) When No 2 has lifted the old *magazine* off tl *magazine post*, No 3 takes it, and hands it No. 2 underneath the gun

(c) No. 1 reloads and carries on firing.

2 **Vulnerability of aeroplanes.**—The fact that an aeroplane does not at once crash to the ground when fired at is apt wrongly to discourage the firer This need not be the case, for the ultimate effect of any shooting is often very considerable

3 The vulnerable part of an aeroplane is very small, compared with its total surface A machine flying at 500 feet at an angle of 5° to a flank presents a target approximately of 460 square feet

4 Of this surface, 106 square feet is sufficiently vulnerable if struck to place the machine out of action for from 12 to 24 hours The total surface, which, if struck, would render the aeroplane unserviceable for from 24 to 36 hours, is about 20 square feet, while the total surface which, if struck would bring the machine down at once, is only about 2 5 square feet, or about 1/200th of the total target.

123. *Control of fire*

(India —Section 123 not applicable)

1 If aeroplanes that are out of range are fired at, the only result will be a waste of ammunition.

2 **By day,** it may be taken as a general rule that a machine is within range so long as the struts or national markings are clearly visible to the naked eye.

3 At 3,000 feet the side view of the struts and national markings are usually visible to the naked eye

4 At 500 feet, such small objects as cross wires, machine guns, and identification marks, are visible, and the features of the pilot and observer may be distinguished

5 **By night,** fire should only be opened (a) when t' struts can be seen, owing to the aeroplane being in the ?

of a searchlight, (b) when it can be seen, without the aid of a searchlight, silhouetted against the sky

6. An aeroplane travelling at a speed of 120 miles an hour, at an altitude of 500 feet, and directly over the gun, is only in range for 34 seconds Speed in getting into action, and a sharp look-out are, therefore, essential

7. **Ammunition.**—*Magazines* for use with anti-aircraft guns should be loaded with one round of tracer ammunition in every five rounds of Mark VII ordinary If armour-piercing ammunition is being used, the *magazines* should be loaded with two rounds of armour-piercing and one of tracer ammunition to every five rounds of Mark VII ordinary.

8. All *magazines* specially loaded for anti-aircraft work [illegible]l be so marked and kept apart from *magazines* loaded ordinary work

NOTES FOR INSTRUCTORS

—Sequence of instruction in the sights.

I.—Describe briefly —

(a) *Mounting*,

(b) *Connection*,

(c) *Sling*.

II.—Affix the *connection* to the gun

III.—Describe the *A A backsight*.

IV.—Affix the *A.A. backsight* to the gun.

V.—Describe the *A.A. foresight*.

VI.—Affix the *A.A. foresight* to the gun.

VII.—Mount the gun.

VIII.—Tell the students which of the two *rings* to use, according to the height of the aeroplane.

IX.—Give rules for aiming, and show diagrams.

X.—Give the exception to the above rules, *i.e.*, diving aeroplane Remember—an aeroplane must be actually nose-diving straight at the gun to be considered an exception

XI —Show the students correct aims—aim corrector Draw diagrams

XII —Let the students lay aims—check by means of the aim corrector

XIII —Elementary aiming —
(*a*) Stationary with stick
(*b*) Moving with stick

XIV —Advanced aiming
(*a*) and (*b*) —As in No. XIII, but without stick.

B —Sequence of instruction in A.A. elementary handling.

I.—Mounting and dismounting the *tripod*.

II —No. I repeated with the addition of the gun.

III —Points to note before going into action.

IV —Positions of the gun "numbers"

V.—No IV repeated with the addition of loading.

VI.—No V repeated with the addition of aiming and firing

VII.—No VI repeated with the addition of "Change *magazines*."

VIII.—No VII repeated with the addition of "Stop."

IX.—"Aircraft action" complete.

Tests of Elementary Training (Lewis Gun).

124. *General instructions.*

1 Tests of elementary training suitable for testing a man's efficiency at three stages of his training are set out in the table below —

(a) Those of Standard "A" are suitable for the recruit to pass before firing the Lewis Gun part of Table "A" (*India—Add Table T, Part IV and Table A F. I, Part IV*)

(b) Those of Standard "R" are suitable for the soldier to pass before firing the Lewis Gun part of Table "R" and Table "T"

(c) Those of Standard "L" are suitable for the soldier qualified to fire Table L (*India—Add Table A. F 1, Parts V and VI.*)

2. Every soldier before firing the Range Practices of the Annual Course should pass the Tests of the Standard applicable to whichever table he is about to fire.

3 The passing of the Tests must on no account be judged merely on the time limit, as accuracy of manipulation is the important consideration. Consequently, even though a man completes the test in the time limit but at the same time is incorrect in some part of the handling, he should be judged as having failed to pass the Test.

TESTS OF ELEMENTARY

In all Tests where No. 2 takes an active part, the test is obviously due to faulty manipulation by

Method of

STAND

Name of Test	Kit required	Conditions before Test.
1. Loading.	Gun — Spare parts — Magazines — dummies	Nos. 1 and 2 lying behind the gun. No. 2 to have a *magazine* ready but not on the gun. *Butt* on the ground. *Return spring* to be at the normal firing weight.
[illegible] Adjustment of [illegible] *sights*		No. 1 lying behind the gun *Sights* to be at 400 yds. *Leaf of backsight* down
3. Holding and aiming.	Gun—*Spare parts*—*eye disc.*	No. 1 lying behind the gun *Butt* on the ground. Gun "Clear" no *magazine* on the gun *Cocking handle* back

TRAINING—LEWIS GUN.

should be regarded as a test for both numbers and if failure one, the other should be given another trial.

conducting Tests.

ARD A

Manipulation Tested	Time.	Remarks.
1 On the command "Load" No 2 places *magazine* on the *magazine post* correctly No 1 rotates the *magazine* and pulls back the *cocking handle* Gun to be properly loaded	3 secs from the command "Load" until No 1 has pulled back the *cocking handle*	He will be tested 4 times and should pass in 3 of them
2 On the range being given No 1 sets the *sights*	4 secs	A maximum alteration in range of 400 yds up or down will not be exceeded. Each man to be tested 4 times, 3 of which must be correct
3 Correct holding and aiming	5 secs from command "Go" until No 1 has pressed the *trigger*	The man will be tested 4 times and must pass 3 out of 4 times The *eye disc* should be held about 1 yd. from the end of the *front radiator casing* The height of the *eye disc* should be varied for each aim taken.

—*continued*

Manipulation Tested	Time	Remarks
4 On the command "Unload without firing," No 1 assisted by No 2 removes *magazine* and the round in the *feed way*	15 secs from the word of command until both Nos stand up	—
5. Tension adjusted to the normal firing weight of the gun and tested with *spring balance*. Stripping and reassembling performed correctly	1 min from the word "Go" until gun is reassembled	To pass, the adjustment to be within ½ lb of correct weight.
6. On the command "Range Indication action" Nos 1 and 2 will double forward 5 *yds* independently Gun to be mounted correctly on the spot indicated Gun loaded, *sights* correctly adjusted and first aiming at the target named Positions of Nos 1 and 2 to be correct.	20 secs from the command "Action" until No 1 says "Up"	"Gun mounted correctly" includes putting the *legs of the field mount* down gently and transferring the *butt* from the right to the left hand before No 1 assumes the lying position

ARD R.

Manipulation Tested.	Time.	Remarks.
7. Holding and aiming to be correct	3 secs from the word "Go" until No 1 presses the *trigger*	3 aims out of 4 to be correct The height of the *eye disc* should be varied for each aim.
8 —	4 secs.	—
9. —	50 secs	—
10 *Magazine* correctly filled with 47 rounds, no spaces missed	1 [illegible] secs from [illegible]	[illegible] must be carried out on the range and precautions taken to prevent live ammunition becoming mixed with dummies.
11. —	17 secs.	—

—continued.

Manipulation Tested	Time.	Remarks
12 Immediate action performed correctly in all details	5 secs from the order indicating the cause of the stoppage, until No 1 presses the *trigger* again, except damaged *magazine* 7 secs Weak *cartridge guide* 15 secs	In the case of the stoppage being due to a damaged *magazine* or a weak *cartridge guide* the time will be taken from the last word of the command "Gun does not fire" or "Gun fires a few rounds and stops again" respectively
13. O [illegible]	[illegible]	—

ARD L—

14 Same as Test 8	14 secs.	—
15. On the command "Gun does not fire," No 1 clears the gun correctly, changes the bolt, reloads, relays his aim correctly and fires.	40 secs. from the command "Gun does not fire" until gun is again firing	—

continued.

Manipulation Tested.	Time.	Remarks
16. On the command " ... fires a few rounds a... stops again," No 1 cl... the gun, takes 3 ... weight off the re... *spring* reloads, relays ... aim and fires	[illegible]	[illegible]
17. On the command " ... still won't fire," N... clears the gun and cha... the *piston* rod correc... reloads, relays his aim a... fires	[illegible]	[illegible]
18 Same as for Test 13.	9 secs	—
19 On the command "Aircraft Action," the gun numbers perform the necessary duties as laid down in A 4 elementary handling No 1 fires as soon as he gets a correct aim on his target. *Mounting* to be correctly adjusted to the height required by No 1, Nos 1, 2 and 3 in their correct positions; gun loaded and	14 secs from the command "Action" until No 1 has pressed the trigger	The instructor will check the aim by means of the *aim corrector*

3 For the purposes of instruction, therefore, the subject can be divided into the following distinct and progressive stages —

i *Elementary handling* —This deals with the actions required of Nos 1 and 2 in accordance with certain orders or signals

ii. *Advanced handling* —This is a further stage in which the main consideration is the adaption of the actions of elementary handling to varying conditions of ground

iii *Duties of Nos. 1, 2 and 3, and handling from the pack.*—This comprises such detailed individual training as is necessary to enable the men to perform the duties allotted to these numbers.
(*See* Cavalry Training, volume I, (1924) Secs **202** *et seq*)

iv. *Mounted drill.*—(*See* Cavalry Training, volume I.)

126. *Elementary handling.*

1. Training under this heading is designed to teach men to bring the gun into action quickly, correctly mounted in a position suitable for firing.

2. The gun, etc., having been placed in a position suitable for carrying out the exercises, the class falls in. The men form in line in rear of the gun and number from right to left.

10 He then loads, assisted by No 1, adjusts the sights, holds the gun in the firing position, and aims at the mark indicated

11 No 1, carrying the *ammunition carrier* and spare barrel, will advance with No. 2 and drop down on the latter's right He must lie in such a position that he can readily assist in loading or supplying *spare parts* when wanted, whilst at the same time he offers the minimum possible target surface to the front

12 When in position, No 1 will take a second *strip* from the *carrier* and hold it in readiness for use He will also see that the *spare parts bag* on No 2 is in a position of readiness

13 When No 2 is ready to open fire he calls out "**On**" to No 1, who will raise his left hand over the shoulders of No 2, and at the same time watch the instructor for signals

14 On the command "**Fire,**" No. 1 will shout "**Fire,**" whereupon No 2 will press the *trigger* and *fire in short* bursts of about one second's duration, pausing to observe fire and to relay his aim between bursts,

15 On the command "**Change**" (strips), No. 2 (keeping the butt in his shoulder) will press up the *feed piece* with his right hand, whilst No 1 withdraws the *strip* from the gun (unless [illegible]

[illegible] the command "**Stop,**" No. 2 will cock the gun (if moving parts are forward) and, assisted by No. 1, change strips He will then place the *butt* on the ground, an[d] await further orders

Subjects.—The progressive stages should be:—

Working up to—	Progressive Stages
I.—Take Post .	i. Class arrangements (falling in and numbering off, &c) ii Action of No. 2 iii Action of No. 1 iv Carry out by word of command.
II.—Action .	i No 2 carrying forward, and placing the gun in position ii Position of No 1 iii Repeating i and ii, adding loading. iv. Repeating iii, adding adjustment of *sights* and aiming v Repeating iv, adding firing vi. Carry out by word of command.
III.—Change *Strip* .	i. Each action of Nos. 2 and 1. ii Carry out by word of command.
IV.—*Stop* . . .	i Each action of Nos 2 and 1 ii. Carry out by word of command.
V.—Unload . .	i. Each action of Nos. 2 and 1. ii Carry out by word of command.
VI.—Cease firing .	i Each action of Nos. 2 and 1 in preparing the gun for movement ii Each action of Nos 2 and 1 in moving to the "cease firing" position. iii. Carry out by word of command
VII.—Signals .	i. Teach the signals and test recognition. ii Carry out Elementary Handling, substituting signals for words of command.

Suitable exercises include —

(a) *Mounting the gun for firing over or round cover of*

not used

(b) *Firing from behind the crest of a gentle slope.*

(c) *Methods of crawling with the gun* —As crawling is fatiguing and slow, it should be limited normally to movement over the last 2 or 3 yards on to a fire position, or for crossing short exposed stretches in an otherwise concealed line of approach

Crawling should only be employed when other forms of movement would spoil the chance of surprise by disclosing the movement.

(d) *Nos. 1 and 2 carrying the gun together, moving behind cover,* which only affords concealment to a man in a crouching attitude.

. The *actions of Nos. 1 and 2 are legislated for in the* going sections, elementary and advanced handling.

. No. 3 is the pack leader and when the gun is in action becomes the horse-holder. In addition to the normal ies of a horse-holder No 3 must, as soon as he has got horses under cover, be prepared to off-load the ammuni- in case the troop leader requires more strips for th

PRELIMINARY TRAINING.

(WITH NOTES FOR INSTRUCTORS.)

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128. *Loading and unloading*

1. To fill the strip.—Force the cartridges between the *clips* until the rear face of the base of each cartridge rests against the front face of the *small raised rib* or the *continuous rib* on the rear edge of the *strip*

(For description of the machine for filling *strips* and *belts*, see Appendix III, Section 3 (1).)

2 To remove the cartridges from the strip.—Hook the forefinger under the bullet, and, pressing the thumb on the *strip*, force the cartridge out of the *clips*.

3. To load the gun.—

i. Pull back the *cocking handle* sharply to the full extent

ii. Raise the *feed piece* by pressing up the base of the *feed piece stem*.

iii. Insert the *strip* into the *strip guides* with a sligt upward as well as a lateral movement and push home the *strip* until the *cartridge stop plunger* protrudes about ¼ inch from its housing, or abou twice as much as in the "rest" position. Th protrusion indicates that the *strip* is fully home

the cartridge then being opposite the *chamber* and the gun ready to fire

4 **To unload the gun.**—When fire ceases, the *moving parts* are normally in the backward position If a partially expended *strip* is in the gun it must be removed by pressing the *stem* of the *feed piece* up as far as possible and withdrawing the *strip* to the right The *trigger* must then be pressed to release the *recoil spring* and close the *breech*. If, however, the *moving parts* are in the forward position when fire ceases, as will be the case when using dummies, or when there is a stoppage, the *cocking handle* must first be pulled sharply back Finally, the *trigger* must be pressed to release the *recoil spring* and close the *breech*.

5 If it is required to close the *breech* before a *strip* has been inserted, it is necessary first to raise the *stem* of the *feed piece* so that the lower *arm* is disengaged from the *shoulder* on the *piston rod* The latter then moves forward until it is held by the *sear*, and when the *trigger* is pressed the *piston rod* will fly forward

NOTES FOR INSTRUCTORS.

Subjects.—

I.—Filling the *strip*

II —Unloading the *strip*.

III.—Introducing the *strip* into the gun.

IV.—Unloading the gun

Note.—Each of these lessons should be learnt and practised by each member of the class before proceeding to the next lesson.

N

the cartridge then being opposite the *chamber* and the gun ready to fire

4. **To unload the gun.**—When fire ceases, the *moving parts* are normally in the backward position If a partially expended *strip* is in the gun it must be removed by pressing the *stem* of the *feed piece* up as far as possible and withdrawing the *strip* to the right The *trigger* must then be pressed to release the *recoil spring* and close the *breech*. If, however, the *moving parts* are in the forward position when fire ceases, as will be the case when using dummies, or when there is a stoppage, the *cocking handle* must first be pulled sharply back Finally, the *trigger* must be pressed to release the *recoil spring* and close the *breech*.

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NOTES FOR INSTRUCTORS.

Subjects—

I.—Filling the *strip*

II.—Unloading the *strip*

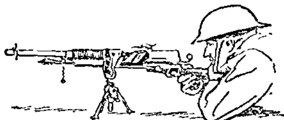
III —Introducing the *strip* into the gun

IV.—Unloading the gun

Note.—Each of these lessons should be learnt and practised by each member of the class before proceeding to the next lesson.

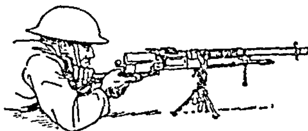
PLATE 78

Fig A



HOTCHKISS—HOLDING.

Fig. B.



HOTCHKISS—HOLDING.

this means the rate of fire is regulated in short bursts of 4 or 5 rounds at a time Simultaneouly with releasing the trigger, the firer should observe the result of his fire by looking over or round the *sights* at the target.

9 The firer must always relay his aim between the time of releasing the *trigger* and pressing it again

Notes for Instructors

Subjects—

Instruction in holding, aiming and firing can normally be combined in the same lesson period, and must be taught in that sequence

Special Notes

Holding.

1. Although there is no appreciable shock of recoil to "hold" against, the vibrations set up when the automatic action of the gun is in play are such that unless countered they will throw the gun completely off its alignment. A [illegible] accurate shooting
— [illegible] ing some part of
ins [illegible] tion is not being
us [illegible] ksmanship.

Aiming

2 Men should be taught to adjust the *backsight* [illegible] ration before they are taught to aim.

3 Aiming is best taught as follows:—

First, by explanation of correct and incor[illegible] diagrams.

Second, the instructor lays the gun (rested [illegible] venient way) with a correct aim and lets [illegible]

that aim. Then the recruit lays an aim and the instructor checks.

Third, the recruit aims at the *eye disc* which is held by the instructor about one yard from the *muzzle* of the gun

(*Note*.—Before doing this the instructor **must** satisfy himself by personal inspection that the gun is unloaded.)

4. Although some form of bullseye aiming mark can be used in the first stages of aiming instruction, the subject cannot be considered to be learnt until the instructor has satisfied himself that the recruits can aim correctly at "landscape" aiming marks Thereafter the landscape aiming marks should be used in all subsequent training

Firing.

5. The recruit should be taught to observe his fire by developing the habit of looking at the target over or round e *sights* every time he releases the *trigger* The sequence f acts being—Aim—press *trigger*—release *trigger*—look—relay aim—press *trigger*—and so on

6 Instruction in aiming and firing should include changing the point of aim along a linear target by, approximately, a width of the *foresight*

Kit required.—Gun, aiming diagrams, an aiming mark, *eye disc*, a landscape target, *ammunition carriers* or some other form of rest for the gun when laying an aim.

130. *Stripping and assembling*

1. **To strip the gun.**—The gun is stripped in the order set forth in the succeeding paragraphs.

2. **1st, Cocking handle.**—See that the *breech* is *closed* Turn the *lever* of the *cocking handle* upwards until it will go no further It is then slightly to the *left* of the *vertical*,

and the *tenons* correspond with the *tenon recesses* in the rear opening of the *guard* Draw back the *cocking handle* until the *tenons* are clear, then turn it to the right so that it is at an angle of 45° with the vertical This brings the open *grooves* on the *stem* opposite the *ribs* of the *collar* in the *guard*, and the *lugs* on the *stem* in line with the *recesses* in the *collar* in the *piston rod* The *cocking handle* can then be withdrawn

3. 2nd, **Butt and Guard.**—Unscrew the *guard locking screw* three turns and, pressing the *butt* forward and then downwards, disengage the *projections* on the sides of the *guard* from their *recesses* in the *body* and the *trunnions* from their *hooks* Remove the *butt* and *guard*

4. 3rd, Take out the **recoil spring.**

5. 4th, **Piston rod.**—Insert the *cocking handle* in the *piston*, with its *handle* at an angle of 45° to the right of the vertical, so that the *lugs* enter the *recesses* in the *collar* in the *piston rod* Turn the *lever* vertical and draw the *piston rod* with the *breech block* out of the *body* **No force must be used in removing these parts.**

6. 5th, **Breech block.**—Lift the *breech block* off the *piston rod.*

7. 6th, **Firing pin.**—Turn the *upper boss* of the *firing pin* out of the *recess*, and draw the *firing pin* backwards out of the *breech block*, raising its rear end while so doing

8. 7th, **Tripod.**—Press in the *clips* of the *yoke* and remove the *tripod.*

9. 8th, **Barrel.**—Turn the *locking nut* to the right as far as the *stop* will permit, by means of the *wrench*. Draw the *barrel* out to the front Unscrew the *regulator* and remove it.

10. 9th, **Handguard.**—Turn the *locking nut* slightly to the left to disengage its *stud* from the *handguard* and remove the latter.

11. 10th, Unscrew the **Barrel locking nut** and remove it

12. 11th, Take out the **Fermeture nut** from the *body*.

13. **To assemble the gun.**—*Reverse the operations*

14. Before replacing the *piston rod* and *breech block*, the *fermeture nut* must, if necessary, be rotated by hand to the unlocked position, when its *slot* corresponds with the *ejection opening* in the *body* The *upper boss* of the *firing pin* must be placed in the *recess* in the *breech block* in order to allow it to lead in to the *body*

15. After inserting the *piston rod* and pushing it partly forward, it will be checked by the *shoulder* on its right coming against the *lower arm* of the *feed piece* The *stem* of the latter must be pushed upwards to allow the *piston rod* pass and go fully forward. **No force must be used in** ng the piston.

16 When replacing the *guard*, an inch or so of the *stem* of the *cocking handle* should be inserted through the hole in the rear face of the *guard* in such a manner as to secure the rear end of the *spring* The *cocking handle* should lie diagonally downwards on the left of the *butt stock* and be grasped, as well as the *butt stock*, with the right hand.

131. *Stripping component parts.*

1. The extractor.

(a) Insert the *hook* of the *hand extractor* or a small *drift* or *screwdriver* between the two rear *coils* of the *extractor spring* and compress the *spring*

When the base of the *spring* is clear of its *recess*, the *extractor* and *spring* may be drawn outwards and removed from the *breech block*.

(*b*) To remove the *extractor* without stripping the gun. —Remove the *strip* from the gun. Take an empty case and place it in the front end of the *ejection opening* Pressing the *trigger* and controlling the *moving parts* by means of the *cocking handle*, allow them to go forward slowly till they are stopped by the case The *extractor* and *spring* will then be accessible through the *ejection opening*, and can be removed in the ordinary way

2. **The trigger mechanism.**—Lift the *T-headed arm* of the *trigger mechanism* until it is clear of the *sear arm*, then revolve the *milled head* until the *sear axis* can be lifted out. Pushing the *trigger bar* backwards to its full extent, lift the front end to get the *trigger* clear of its *slot*, and remove the *trigger* mechanism Separate the two portions by removing the *spiral spring*

3. **The feed piece spring.**—See that the *feed piece* is in such a position that the undercut *stud* can be disengaged. Push the *feed piece spring* slightly forward to disengage it from the undercut *stud* on the stem. Then lift the *finger piece* of the spring and draw it backwards until the *tongue* is clear of the undercut *recess* on the front *feed guide*. **Care must be taken not to lift the spring more than is necessary, to avoid straining or breaking it.**

4. **The feed piece.**—Open the *feed piece cover* and raise the *backsight* to a vertical position. Lift the *stem* and revolve it to the rear until the *flat* is opposite the openi in the upper bearing. Remove the *stem*.

5. **The ejector.**—Using the *ejector key*, unscrew the *ejector cap* and remove the *ejector*.

6. **The cartridge stop.**—Unscrew the *cartridge stop holder*, and remove the *plunger* and *spring*.

7. **To change the barrel.**—With the *dismounting wrench* turn the *locking nut* as far as it will go, and draw the *barrel* out of the *body*. If the *barrel* is too hot to handle, one man should firmly hold the *barrel* with the *dismounting wrench*, while the other draws the *body* and *guard* to the rear. The spare *barrel* is then inserted and the *locking nut* turned back into the locked position. A hot *barrel* after removal from the gun can be handled by passing the *slot* in the centre of the *dismounting wrench* over the *stud* underneath the *muzzle* for the *barrel rest*.

8. **The foresight** can be driven out of its bed with a *punch*.

9. To remove the **backsight.**—Unscrew the *fixing screw* [illegible] front end of the *backsight bed* and remove the *spring* [illegible] press the *sight* backwards and *lift off*.

NOTES FOR INSTRUCTORS

Preliminary.

1. This subject should be dealt with under two distinct headings:—

   i. *Stripping* necessary in order to clean the *gun* and to keep it in good order.

   ii. *Stripping component parts* which might break when firing, so that they can be exchanged for spare parts quickly. Only those parts which it is absolutely necessary to move should be stripped when changing a damaged part.

2 Sequence of lesson :—

i Stripping and replacing each part.

ii. Practice

iii Stripping component parts

Subjects.—Sequence is necessary during the early lessons in stripping for cleaning, so that the reasons for certain precautions may be impressed on the men When they are proficient it does not greatly matter in what order the various parts are removed, provided there is no chance of the gun being damaged

Sequence of stripping

I. **Body Group.**—*Cocking handle, butt stock and guard, recoil spring, moving parts* (i.e., *piston* and *breech block*), *firing pin.*

II. **Barrel Group.**—*Tripod, barrel, handguard, barrel locking nut fermeture nut* and *gas regulator.*

III. **Stripping component parts.**—These include the *trigger mechanism, feed piece* and *spring, extractor, ejector* and *cartridge stop.*

Special Notes.

1. The greatest value will be obtained from the instruction by allowing the man to try to remove certain parts without any assistance; the instructor should not interfere except to prevent damage to the gun, or to offer suggestions if the man finds his task difficult or impossible.

2. Each part of the gun should be removed and replaced by the whole section before going on to the next For each part a different man should be selected as the first to attempt it

rag-clean. Finally, pass a slightly smaller oily piece of flannelette through the *bore* unless the gun is to be fired immediately

6. Great care must be exercised in using the *cleaning rod* to avoid breaking it at the *joints* When inserting, it must be supported by one hand close to the point of entry to the *barrel;* flannelette which is too large to enter the *bore* with reasonable ease must not be used, and the push and pull of the *rod* must be in a line with the axis of the *bore.*

7. A damaged *cleaning* rod must not be used, on account of its liability to scratch and cut the *bore.*

8. The normal method of cleaning will be by use of the *double pull-through* and flannelette For this, the *barrel* will always be removed from the gun

9. One of the *double pull-throughs* provided should have a piece of wire *gauze* attached as laid down in Sec. 38, 4, while the other should be used for dry flannelette only.

10. Having carefully oiled the *gauze*, drop the *weight* of the *pull-through* through the *bore*

11. The *barrel* should then be fixed in a vice, or held by a man, while one man works either end of the *pull-through.*

12. Unless rust or metallic fouling are present in the *bore,* the *gauze* should not be pulled backwards and forwards more than three times, in order to avoid wearing out the *barrel.*

13. The gauzed *pull-through* should then be laid aside, and the other one used with dry flannelette until the *bore* is rag-clean. In doing this, the flannelette must be pulled out of the *bore* each time To reverse the direction of the pull while the flannelette is in the *bore* will lead to its becoming jammed.

21 **To clean the cup of the piston.**—Remove fouling with an oily piece of flannelette, leaving the *cup* slightly oiled unless the gun is to be fired immediately

22. **To clean the mechanism.**—The *moving parts* must be removed, but it will not always be necessary to strip the *trigger mechanism, extractor, ejector* or *cartridge stop.*

23. All parts must be thoroughly cleaned with a mixture of equal parts of G S lubricating oil and mineral burning oil They must afterwards be dried and lightly oiled with G S. lubricating oil before they are replaced.

24. Dirt must be carefully removed from all parts of the *stationary portion*, particular attention being paid to *recesses* which are likely to harbour dirt

Dried oil can be removed by the use of mineral burning oil (paraffin)

After the *parts* have been replaced, the exterior of all metal portions should be rubbed over with a piece of flannelette and lightly oiled with G S lubricating oil.

25 **To clean the strip.**—Rust should be removed and the [illegible] s a preserva- [illegible] is convenient [illegible] ely necessary [illegible], the *chamber* [illegible] uct the entry

[illegible] sandy and dusty countries. [illegible] ing in sandy and dusty countries, great care must be taken to avoid grit getting into the *moving parts* and on the *strips.* This applies more when the gun is being fired than when resting, as in the latter case it is easy to cover the gun When firing, arrangements should be made to avoid the disturbance of dust, caused by the action of the *moving parts* and gases escaping from the *handguard.*

Ammunition and *strips* will be carefully examined, any rounds affected by gas will be replaced, then cleaned and used as soon as possible

NOTES FOR INSTRUCTORS.

Subjects—

I.—Daily cleaning of the *barrel* and *mechanism* when necessary

II.—Cleaning after firing.

III—Use of the *double pull-through* to remove fouling.

IV—Cleaning *strips*

V—Protection of the gun from the effects of gas

Kit required—Gun, spare parts, cleaning accessories.

134. *Points to be attended to before firing*

1. Examine the gun to see that no part is deficient and that the *mechanism* works freely.

2. Remove the oil and examine the *bore* to see that there is no obstruction in it.

3. Remove the oil from the *gas cylinder* and *gas regulator*, and set the *gas regulator* to the proper graduation.

4. In order to avoid smoke, which would disclose the gun position, remove the oil from the exterior of the *barrel*.

5 These precautions should be taken with the spare *barrel* as well as that in the gun.

6. Thoroughly oil with G.S. lubricating oil all *working parts* and surfaces of the *mechanism*.

7. Test the action of the *ejector* and the *cartridge* They should work freely and without stiffness,

16. See that all *cases* and *bags* are properly secured, to avoid loss or damage in transit

135. *Points to be attended to during firing.*

1. Keep the *strips* in their *boxes* until they are required, and replace empty *strips* in the *box* as soon as possible Take care to avoid damaging them and to prevent the risk that they might carry dirt into the *mechanism* or *chamber*.

2. Manipulate the *gas regulator* as may be required to maintain a desired rate of fire It can, as a rule, be opened out as the gun gets hot

3 During a temporary cessation of fire, if time permits, the gun should be unloaded and the *moving parts* oiled

A partially empty *strip* should be replaced by a full one when fire ceases temporarily Empty or partially empty *strips* must be filled without delay provided ammunition is available

4. In cold weather, the amount of oil used for lubrication should be reduced to a minimum, as it is likely to congeal and affect the working of the *mechanism*.

5 The *barrel* may be cooled by cold water The water may be applied externally by means of a sponge or cloth, or the *barrel* may be dipped in it In the latter case, the water must be removed from the *barrel* and *gas cylinder* before firing is resumed.

6. When the gun ceases firing and on opening the *breech* it is found that a cartridge case has been withdrawn from the *chamber*, the case must be carefully examined to see if the propellant has been ignited. If the propellant has been ignited, the bullet will most likely be found in bore near the *breech* and should be removed by means

MECHANISM AND STOPPAGES.

137. *Mechanism, gas and spring*

A.—Action of the gas.

1 The gases generated by the explosion of the charge force the bullet up the *barrel*, when the bullet has passed the *gas vent*, a portion of the gases rush with great force into the *gas cylinder*, and find their way out by the passage in the rear end of the *cylinder*.

2. The *cupped head* of the *piston* being over this end, the *piston* is given a sharp blow and forced backwards

3. The under *boss* of the *firing pin*, being engaged between the two *blocks* on the *piston rod*, is taken back with the *piston*.

4 The early part of the *piston's* backward movement causes the *fermeture nut* to revolve, as the forward sloping *surface* of its boss is engaged with the forward *edge* of the *cam groove* on the *piston*, thus unlocking the *breech block*.

5. When the *firing pin* is fully withdrawn, the large *block* on the *piston rod* carries back the *breech block*, and during this motion the *cam groove* inside the *body* turns the *firing*

pin over to the left, so that its upper *boss* lies in the *recess* in the *breech block*.

6. The empty case, being gripped by the *extractor*, is extracted until its base strikes the *ejector*, when it is ejected.

7. The lower *cam* on the right of the *piston rod*, working against the forward lower *arm* of the *feed-piece*, causes the *lever* of the *feed piece* to move to the left. The *claw* on the *lever*, being kept in one of the centre clips of the *strip* by the *spring*, pushes the *strip* over to the left, thus placing a fresh cartridge into position. The *tooth of the feed-piece spring* rides over the *strip* into the next rear *clip* of the *strip*.

8. As the end of the backward *travel* of the *piston* is neared, the *bent* on the *piston* rides over the *sear*, depressing it.

9. When the *bent* has passed, the *sear* rises by the influence of the *sear spring*.

10. The *piston* now comes up against the *standard* of the *trigger guard* and can go no further back.

During the backward movement the *recoil spring* has been gradually compressed between its seating in the *collar* in the *piston*, and the *collar* in the *guard*.

B.—Action of the recoil spring.

11. The actions caused by the force of the gas cease when the *piston rod* is arrested in its backward travel. The *spring* then comes into play and moves the *piston rod* forward until the *bent* is caught and help up by the *sear*.

12. If the *trigger* is now pressed the *block* of the *sear* is lowered and released from contact with the *bent* of the *piston rod*. The *recoil spring* coming into play forces the *piston rod* forward.

13. The *firing pin* is taken forward with it, and the upper *boss* of the *firing pin* being in the *recess* of the *breech block*, takes the *breech block* forward too.

14. The next cartridge, partly forced out of the *strip* by the wedge-shaped *tongue*, is opposite the *chamber*, and the *strip* is held so that it cannot move by the *tooth* on the *feed-piece spring*, when the *breech block* is taken forward the top edge of its face strikes the bottom of the base of the cartridge, and forces it clear of the *strip* into the *chamber*.

15. The upper *cam* of the *piston* working against the rear *lower arm* of the *feed-piece* causes the *feed-piece* to rotate to the right. This causes the *lever* to ride over the *strip*, until the *claw* is forced into the next centre *clip* of the *strip*, by the *feed-piece spring*.

16. By this time the *breech block* has been sent completely forward, and the *extractor* rides over the rim of the cartridge and grips it.

17. The *groove* in the top of the *body* now rotates the *firing pin* so that its upper *boss* is clear of the *recess*, and opposite the long slot in the *breech block*.

18. As this movement finishes, the *cam groove* on the top of the *piston*, working against the *boss* on the *fermeture nut*, rotates the latter, until it locks the *breech block* securely to the *barrel*.

19. While this rotation is going on, the *firing pin* is still being carried forward, and at the moment after the locking rotation has been completed is carried against the cap and ignites the cartridge

C.—Mechanism of the trigger.

20 The behaviour of the *trigger mechanism* is controlled by the position of the *disc* on the *cocking handle*

21 When the *disc* is set to "S" it prevents the backward movement of the *trigger bar*, and the gun cannot be fired.

22 When set to "R" the smaller of the two *recesses* in the *disc* is opposite the *tail* of the *trigger bar*. As the latter is pulled back by pressure on the *trigger*, the *hook* on the *front of the T-headed arm* draws with it the *arm of* the *sear*. This causes rotation of the *sear axis*, and a consequent depression of the *block* of the *sear* which releases the *piston rod*.

23. During this motion, the *sear spring* is put in tension, both by the pulling back of the *trigger bar* and by the rotation of the *sear axis*

24. As soon as the *trigger bar* has come back far enough to cause the release of the *piston rod*, the *ramp* on its *tail* causes the disc to depress it, with the result that the *hook* of the T-head is lifted and released from the *arm* of the sear. The latter flies forward under the influence of the spring, and the *block of the sear* therefore rises ready to intercept the piston *rod* when it returns after firing the cartridge.

25. The gun cannot again be fired until the *trigger* is released and the T-head allowed *to go forward into engagement* with the arm of the sear.

26 In this position of the *disc*, therefore, it is impossible, provided the *mechanism* is in working order, to fire more than one shot for each pressure of the *trigger*

27. When the *disc* is set to "A" its larger *recess* lies opposite the *trigger bar*. The latter, therefore, is not depressed as it passes the *disc*, the *T-head* is not disconnected from the *sear arm*, the *block* of the *sear* is held permanently depressed, and the *piston rod* is not retained at the end of its backward travel. It therefore flies forward again, and continuous fire is obtained *so long as pressure is kept on the trigger*.

28. The *disc* of the *cocking handle* is prevented from turning during firing by the pressure of the *recoil spring* against the *collar* in the *guard* keeping the *nibs* on the front of the *tenons* engaged in the corresponding *recesses* in the *collar*.

D.—Action of the feed-piece after the last round of each strip has been fired.

29. When the last round of a *strip* has been fired, the motion of the *feed-piece lever* to the left generally ejects the *empty strip*, the *head* of the *lever* acting on the extension at the right-hand end of it.

30. The *stem* of the *feed-piece* is forced down by the *feed-piece spring*, as there is no *strip* in the gun to hold it up; consequently the forward *lower arm* of the *feed-piece* becomes engaged with the *shoulder* on the front of the extension on the lower right side of the *piston rod*, thus holding the *piston rod* back.

31. To continue firing, the *stem* of the *feed-piece* must be raised. This action releases the *piston rod* until it is agn held up by the *sear*. A fresh *strip* will be inserted.

E.—Cocking the gun by hand.

32 When cocking by hand, the *lugs* on the end of the *cocking handle* engage against the *collar* in the *piston rod*, thus enabling the *piston rod* to be drawn back The movement is identical to that caused by the gases

33 The *stops* at the end of the *grooves*, coming against the *nibs* on the *collar* in the *guard*, prevent the *cocking handle* from being pulled out of the gun.

Notes for Instructors.

Preliminary.

1. Knowledge of the mechanical actions caused by the two rces "gas" and "spring" is the foundation of a man's o of thought in detecting the cause of any stoppage, and grasping the action necessary to remedy it.

2. He must, therefore, have a clear mental picture of the mechanical actions caused by each of these forces.

Although aids to establish this picture in the man's mind—such as models, cut guns, diagrams and cinema pictures—are a great help, a good instructor can show *it quite clearly* by using a gun with certain removable parts detached.

Subjects—

I.—How a portion of the gases operate the *piston*.

II.—That the *piston* rotates and unlocks the *fermeture* nut.

III.—That the *piston* takes back the *firing pin* and *breech block*.

IV.—The rotation of the *firing pin.*

V.—The movement of the *feed-piece* and *strip*

VI.—The compression of the *recoil spring.*

VII.—How the *recoil spring* actuates the *piston*

VIII.—The *firing pin* takes the *breech block* forward and is rotated

IX.—The *upper arm* of the *feed-piece* is moved to the right

X.—The rotation of the *fermeture nut* and locking of the *breech*

XI.—How the *bent* of the *piston* is caught by the *block* of the *sear.*

XII.—On pressing the *trigger*, how the *block* of the *sear* is released from the *bent* of the *piston.*

Kit required.—Gun, spare barrel, ammunition carrier.

NOTES FOR INSTRUCTORS.

Additional mechanism.

Preliminary.

1. There are a few parts of the mechanical functions of the gun which do not lend themselves readily to explanation during the reasoning of the causes of stoppages, and these portions must be taken separately, at a later date.

2. As these parts of the *mechanism* do not come und heading of the explanation of stoppages, it follows a rule, they do not fail. The same exact knowle

is therefore not required by the man, but the instructor must have complete knowledge, so that he may have confidence in teaching.

3. The best time for the lessons on additional mechanism is after the causes of stoppages not cured by immediate action have been reasoned out

Subjects—

I.—The *trigger mechanism.*

II.—The action of the *feed-piece* on the last round of the strip being fired

II —How the gun is cooled.

138. *Stoppages.*

1. It is essential to train men to remedy stoppages in the automatic action of the gun when firing The aim must be to teach the men to detect the cause of the stoppage quickly and to rectify it without delay.

2. Some causes of stoppages will occur with marked frequency whilst others may never occur within the experience of numerous individuals. For training purposes, therefore, the causes of stoppages can be considered in two categories: (a) **Probable;** (b) **Possible.**

3. The greater part of the instruction in stoppage remedying must be devoted to ensure speedy and correct

action in dealing with probable causes, whilst only a limited proportion of the available time should be spent on possible causes.

4 A large proportion of stoppages are remedied by certain actions on the part of the firer which can be learnt as a drill and carried out instinctively whenever the gun stops firing These actions are termed "Immediate Action," and the stoppages cured by their employment are classified as "Immediate Action Stoppages," whilst those which require a further action for their remedy are classified as "Additional Stoppages."

Whenever a stoppage occurs the first action on the part of the firer must always be to perform "Immediate Action."

5 For the purpose of grouping stoppages, three distinct categories are obtained from the position of the *breech block* when the gun stops, *viz* —

(*a*) When the *breech block* is right forward.

(*b*) When the *breech block* is *not* right forward

(*c*) When the *breech block* is sometimes forward and sometimes back, and the gun fires only a few rounds after applying "Immediate action."

Stoppages.

The position of the *breech block* will be sufficiently in cated by the feel of the gun in the firer's shoulder anc tesultant noise after applying "Immediate Actio eliminate any necessity for actually looking for its

The Table should be read from left to right in each does not cure the stoppage the remedy shown in the will be read across and

1. If the gun stops with the *breech block* forward —		
A. COCK THE GUN, RAISE THE FEED PIECE. SHOUT "FEED" TO No 1, WHO PUSHES THE STRIP HOME, RELAY AND FIRE.		
B	If on pressing the *trigger*, the gun does not fire	UNLOAD AND STRIP GUN AS FAR AS, AND EXAMINE—(1) RECOIL SPRING, (2) FIRING PIN. If either is defective :—
C.		If neither is defective :—

horizontal column (A, B, etc) If the remedy given horizontal column next below will be tried Thus the Table down the page diagonally

A —	—	Cause :—(i) Bad introduction (only occurs on loading), or (ii) Missfire, or (iii) Space in strip, or (iv) Hard extraction.
B CHANGE IT, RELOAD, RELAY, AND FIRE.	—	Cause :—(i) Weak or broken *recoil spring*, or (ii) Worn or broken *firing pin*.
C EXAMINE THE FEED-WAY AND FERMETURE NUT FOR—(i) LOOSE CARTRIDGE CAP;	(i) REMOVE CAP, REASSEMBLE, RELOAD, RELAY AND FIRE	Cause :—Loose cap preventing the *breech block* from closing properly.
(ii) FILINGS OR DIRT.	(ii) STRIP DOWN TO THE FERMETURE NUT, CLEAN MOVING PARTS, REASSEMBLE, RELOAD, RELAY AND FIRE.	Cause :—Filings or dirt preventing the *breech block* from closing properly.

D RELOAD	—	Cause :—(i) Bad introduction; or (ii) Hard extraction
E RECTIFY, RELOAD, RELAY AND FIRE.	—	Cause :—Loose barrel
F. If an empty case is found jammed in the *ejection opening* at right angles to the *body*	CLEAR GUN, SCREW UP THE GAS REGULATOR 3 TO 5 TURNS, RELOAD, RELAY AND FIRE.	Cause :—Lack of gas pressure
G If an empty case is found in the *chamber* with a live round being fed in	CLEAR GUN, CHANGE THE EXTRACTOR AND SPRING	Cause :—Broken *extractor* or *spring*
H. If [illegible] there is a live round in the *feed-way* and another being fed into the *chamber*	[illegible]	Cause :—Loose round in *strip*

rounds at one pressure of the trigger.

I	—	Cause :—Lack of gas pressure.

forward or back, but as the knowledge of this fact does not assist Position of the *breech block* is immaterial

Possible stoppages.

Breech block not forward	Examine ejection opening and chamber	
If an empty case is found on the face of the *breech block* or loose in the *feed way* jammed against another round being fed into the *chamber*	Change the ejector and spring	Cause—Broken *ejector or spring*
... live round is found half fed ... o the chamber	Change the barrel, reload, relay and fire	Cause—Separated case

...te—Generally a cloud of smoke issues from the *ejection opening* as ...

Notes for Instructors

1. For instructional purposes this subject should ...ivided into the two distinct parts, i.e., "Immed... ...ction" and "Additional Stoppages".

2. The instinctive procedure termed "Immediate Acti... ...hould be taught first. When the recruit is proficien... ...performing "Immediate Action," he can be taught... causes of those stoppages which are cured by this "I... diate Action". (These are printed in thick type in... foregoing table.) Then, later, the recruit comes to... Additional Stoppages, reasoning from the point when... "Immediate Action" failed.

3. It is unnecessary for men to know every detail ... mechanism of the gun, but they require to know the ca... of certain parts in order to be able to locate the ca... stoppages. Consequently, teaching of mechanism sh...

confined to that which is concerned with each stoppage taught.

4 The following table gives the mechanism that should be taught with each particular stoppage. (The letters refer to the stoppage given in the preceding table.)

Stoppage	Mechanism.
A	Feeding of the round from the *strip* into the *chamber*
C	Locking of the *breech*
G	Extraction
I	Feeding complete, and the action of the *gas regulator*.

5 As the sights are thrown off the target when a stoppage is remedied, the instructor should insist on the importance of relaying the gun after every stoppage. To inculcate this procedure, he should always give an aiming mark when teaching stoppages and their remedy.

6. Possible stoppages should only be dealt with when the soldier can remedy the probable stoppages efficiently. Moreover, the object of such instruction will rather be to make him thoroughly conversant with the working of the gun under all circumstances than to teach him definite remedies.

7. In quarters, when teaching stoppages, the gun must be set up to simulate what would be the condition of the gun when the stoppage actually occurs. (*See* Section 139 setting up stoppages.)

Kit required.—Gun and spare parts complete, empty cases, portion of separated case, instructi[illegible] cape target.

Cause	In barracks	On the range.
Breech block not forward —		
E. Loose *barrel*	Loosen the *barrel*	Do not attempt to set up this stoppage.
G. Broken *extractor*	Load and place an empty case in the *chamber*	As in barracks.
F. Lack of gas pressure	Load and place an empty case in the *ejection opening*, at right angles to the gun	As in barracks.
H. Loose round in *strip*	Load and lever the nose of the bullet down, so that the *breech block* will miss the base of the round when it goes forward.	As in barracks.
I. Lack of gas pressure.	As for "hard extraction," the instructor saying "Gun fires a few rounds and stops again," after "I.A" has been applied.	Open out *gas regulator* or place 2 dummy rounds in the *strip* 3 or 4 rounds apart.

NOTES FOR INSTRUCTORS.

Preliminary.—In setting up stoppages the gun should first of all be firing normally, *i.e.*, the firer should be made to load and fire.

1. The stoppages should be set up while the class, i cluding the firer, have their heads turned away from gun. Thus, in "G," the firer loads, fires and, after p ing the *trigger* to represent a number of bursts, he be told to pull back the *cocking handle*, and turn his

5. **Fermeture nut.**—See that it is not burred or cracked, and that its *threads* and *boss* are not damaged

6. **Piston rod.**—See that the working surfaces and the *cam slot* are smooth and not burred, that the *piston head* is not cracked, and that the face of the *recess* on the underside with which the *sear* engages has not been tampered with

Note.—No attempt must be made to lighten the pull-off by altering the shape of the rear *face* of the *recess* or of the *sear* If this is done, the *sear* will fail to retain the *moving parts* when the *stem* of the *feed piece* is pressed up to release them and so prevent the gun from being loaded; also if the retention of the *piston* is insecure it will render the gun unsafe. As a test for this the gun, unloaded, should be cocked, set at "safe," and then jarred by grounding the butt

7. **Breech block.**—See that all the surfaces are smooth and not burred; that the *interrupted thread* is in good condition; that the front *shoulder of the recess on the left* for the *firing pin* is not cracked or broken; that the hole in the face for the point of the *firing pin* is clear; and that the *extractor* is in good order.

8. The armourer should occasionally test the distance of the face from the end of the *chamber* with ·064 in. and ·074 in. gauges. In order to do this, the *cocking handle*, *guard with butt stock*, *recoil spring*, *firing pin*, *extractor*, *feed piece* and *hand guard* must be removed. The removal of the *firing pin* and *extractor* necessitates the removal of the *piston* and *breech block*, both of which must subsequently be replaced. The removal of the *hand guard* also necessitates the removal of the *barrel*. The forward end of the *piston* can now be controlled with one hand whilst thumb of the other hand is applied to the rear end

NOTES FOR INSTRUCTORS.

The object of this lesson is to teach the men of the *Section*, especially No 1, what to look for when examining the gun. This examination should be done periodically, and whenever a fresh gun is taken over.

Kit required.—Gun and spare parts complete. Any examples of defective parts, such a bulged barrel, cut barrel, etc, as may be available.

141. *Spare parts, diagrams and cut guns.*

1. The list of spare parts is set out in Appendix III to this manual All trained Hotchkiss gunners should know what *spare parts* are carried, and be able to check for deficiencies without a written list.

2. A complete set of *spare parts* should be shown and packed in the *spare parts bag* by the class under instruction.

3. Hotchkiss gun **diagrams** should be hung on the walls of drill halls and barrack-room passages as far as the scale of issue permits.

4. Any points of the mechanism of the gun not fully understood by any of the class should be further demonstrated by means of diagrams The best value is obtained from diagrams if they are so placed that men have access to them out of parade hours.

5 **Skeleton guns** are limited in number, but able they should be used to clear up any mech about which the class may be in doubt.

143. *Anti-aircraft elementary handling—Hotchkiss gun.*

1 The ammunition will be placed on the right of the gun at two paces interval with the *A.A mounting* at another two paces.

2 A model aeroplane will be used as a target.

3 On the command "**Fall in**":—

(a) No 1 takes up a position on the left of the *ammunition carrier*, and examines the ammunition.

(b) No 2 takes up a position on the left of the gun, examines the gun raises the *foresight*, and reports "Ready."

(c) No 3 takes up a position examines the *mounting*, and slings it on his shoulder.

4 On the command "**Aircraft Action**":—

(a) No 3 runs to the firing-point with the *mounting*.

(b) No 2 runs to the firing-point with the gun as soon as No. 3 has reached the firing-point.

(c) No 1 follows No 2 with the ammunition.

5 On arriving at the firing-point:—

(a) No 3 sets up the *mounting* at a suitable height for the firer.

(b) No 1 gets a *strip* ready to load.

(c) No 2 mounts the gun with No 3's help, raises the *backsight*, loads, and fires without further orders.

(d) No 3 stands on the left of No 2.

(e) No 1 keeps the ammunition ready on the [illegible] No 2.

Tests of Elementary Training—Hotchkiss Gun.

144. *General instructions.*

1 Tests of elementary training suitable for testing a man's efficiency at three stages of his training are set out in the Table below.—

(a) Those of Standard "A" are suitable for the recruit to pass before firing the Hotchkiss Gun part of Table "A."

(b) Those of Standard "B" are suitable for the soldier to pass before firing the Hotchkiss Gun part of Table "B" and Table "T"

(c) Those of Standard "L" are suitable for the soldier qualified to fire Table L.

2 Every soldier before firing the Range Practices of the Annual Course should pass the Tests of the Standard applicable to whichever Table he is about to fire

3. The passing of the Tests must on no account be judged merely on [illegible]

[illegible]

[illegible] having failed to pass the Test.

TESTS OF ELEMENTARY TRAINING—HOTCHKISS GUN.

144. *General instructions*

1 Tests of elementary training suitable for testing a man's efficiency at three stages of his training are set out in the Table below —

(*a*) Those of Standard "A" are suitable for the recruit to pass before firing the Hotchkiss Gun part of Table "A."

(*b*) Those of Standard "R" are suitable for the soldier to pass before firing the Hotchkiss Gun part of Table "R" and Table "T."

(*c*) Those of Standard "L" are suitable for the soldier qualified to fire Table L.

2. Every soldier before firing the Range Practices of the Annual Course should pass the Tests of the Standard applicable to whichever Table he is about to fire.

3. The passing of the Tests must on no account be judged [illegible] as accuracy of manipulation is the [illegible] a man [illegible] time [illegible] ju

TRAINING.—HOTCHKISS GUN.

should be regarded as a test of both numbers, and if failure one the other should be given another trial

Conducting Test

"A"

Manipulation Tested	Standard Time	Remarks.
1. On the command "Load," No 2 cocks the gun, and assisted by No. 1, loads correctly leaving the cocking handle at "A"	4 secs from the command "Load" until No. 2 says "Up"	The man will be tested 4 times and must pass 3 times.
On the command "Unload," No 2 unloads correctly, assisted by No 1, No 1 puts the *trips* back in the *carrier*	6 secs from the command "Unload" until both numbers are standing up	—
3 On the range being given, No 2 sets the *sights*	5 secs	A maximum range of 400 yds. may be given Each man to pass 3 out of 4 times.
4 Correct holding and aiming	5 secs from the command "Up" until No 1 presses the trigger	3 out of 4 aims to be correct The height of the *eye disc* will be varied for each aim

Test.	Kit required.	Conditions before Test.
3. " Action " (Dismounted)	Gun — *Spare parts* — Spare *barrel* — *Ammunition carrier* — *Landscape target*	No 2 lying behind the gun No 1 two paces to the right of No 2, in the lying position *Sights at zero*

" A "—*continued.*

Manipulation Tested	Standard Time	Remarks.
5. On the command "Range — Indication — Action" Nos 1 and 2 double forward 5 yds independently, No 2 mounts the gun correctly on the spot indicated, and, assisted by No 1 loads, sets the *sights* to the range given and aims correctly	20 secs from the command "Action" until No 1 puts his hand up	A maximum range of 400 yds may be given

"R."

Manipulation Tested	Standard Time	Remarks
6 Same as Test 3	4 secs	—
7 Instructor gives the command "Go" No. 2 aims and presses the *trigger*	5 secs from the command "Go" until No. 2 presses the trigger	As for Test 4
8 *Strip* correctly filled—so as not to cause a stoppage	1 min 10 secs from the command "Go" until loader says "Up"	Normally dummy ammunition will be used for this Test but live ammunition may be used provided the test is carried out on the range and the precautions taken to prevent live ammunition getting mixed with dummy ammunition
9 Same as Test 5	17 secs	—

"L."

Manipulation Tested	Standard Time	Remarks
12 On the command "Change," No 2 presses up the *feed piece*, keeping the *butt* in the shoulder No 1 reloads with a fresh *strip* and No 2 relays his aim	3 secs from the command "Change" until No 2 is ready to fire again	To pass in 3 out of 4 tries
13 On the command "Gun does not fire" No 2 clears the gun correctly, strips down to the *fermeture nut*, and cleans the *breech block* and *fermeture nut* reassembles the gun, reloads and fires	1 min 20 secs from the command "Gun does not fire" until the gun is again firing	No 1 may assist No 2 in any way. The correct sequence of stripping need not be followed, but damage to the gun in stripping and assembling must be avoided (*India.—Damage to the gun entails failure to pass*)
14 On the command "Change the *barrel*," No 2, assisted by No 1, unloads and changes the *barrel* correctly, reloads and fires	*30 secs from the command* "Change" until No 2 fires again.	The *barrel* to be changed must not be touched by the hands of either No 1 or 2.
15 On the command "For Action Dismount," Nos 1 and 2 dismount, hand over their horses to No 3, take the gun, *spare barrel* and one *ammunition carrier* off the pack, double forward to the fire position, mount the gun correctly in the position indicated, load, adjust the *sights* and aim at the target given.	1 min. 20 secs from the command "For action dismount" until No 2 is ready to fire.	—

Test.	Kit required	Conditions before Test
16 "Cease firing"	As for Test 1[illegible]	Nos 1 and 2 in the corre[illegible] firing positions Gun loaded but *breech block* back The led horses to be 25 yds away from the gun positi[illegible]

"L"—*continued.*

Manipulation Tested	Standard Time	Remarks.
16. On the command "Mount," No 2, assisted by No 1, unloads, No 1 replaces the strips in the *carrier* Both Nos double to the *pack*, No 2 puts the gun on the pack and mounts No 1 replaces the spare barrel and *ammunition* carrier on the *pack*, fastens the *straps* and mounts	1 min 30 secs from the word of command until both numbers are mounted	—
17 On the command "Aircraft Action" the 3 numbers perform the necessary duties as laid down in A A elementary handling No. 2 fires as soon as he has taken the correct aim on his target.	14 secs from the command "Aircraft Action" until No 2 presses the *trigger.*	The instructor will check the aim by means of the *aim corrector*

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"L"—*continued.*

Manipulation Tested	Standard Time.	Remarks.
16 On the command "Mount" No. 2 assisted by No. 1, unloads No. 1 [illegible] the strap in the carrier. Both Nos. [illegible] to the pack. No. 2 puts the gun on the pack and mounts. No. 1 replaces the spare barrel and ammunition carrier on the *pack*, fastens the *straps* and mounts.	1 min. [illegible] secs. from the word of command until both numbers are mounted.	—
17. On the command "Aircraft Action" the 3 numbers perform the necessary duties as laid down in A A elementary handling. No 2 fires as soon as he has taken the correct aim on his target.	14 secs. from the command "Aircraft Action" until No 2 presses the *trigger*.	The instructor wil[illegible] check the aim by means of the aim *corrector*.